

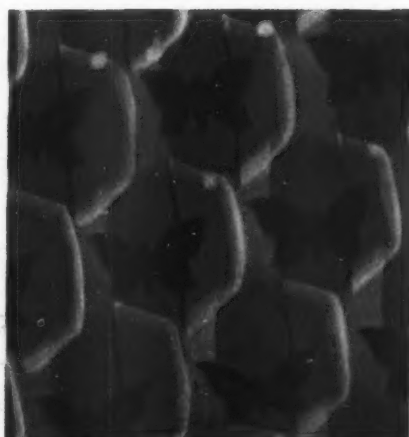
10 CENTS FEBRUARY 1961

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FINE ARTS



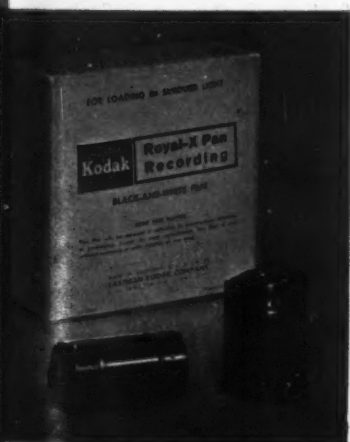
**INTER: TIME TO
GET PEAK ACTION
ACES, CHILDREN
AND LANDSCAPES**



SIX NEW WAYS TO SHOOT OUT OF A COLOR RUT WITH SIMPLE GADGETS



HOW YOU SHOULD BUY AND TEST A 35MM AUTOMATIC SLIDE PROJECTOR



**HERE TO GET &
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WORLD'S FASTEST
5M V B&W FILM!**

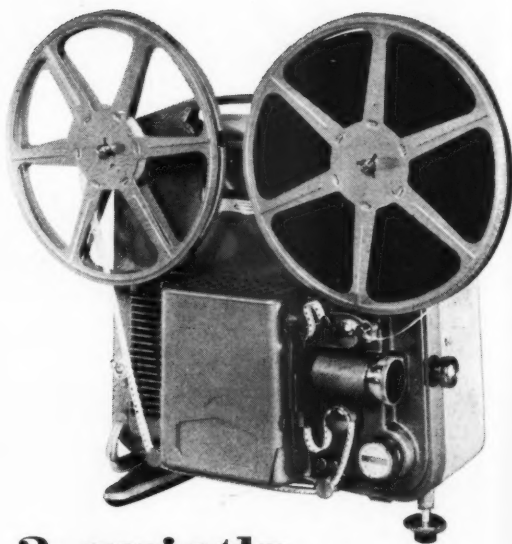


TAKING PICTURES AFTER DARK: AN EASY SYSTEM FOR GOOD EXPOSURE

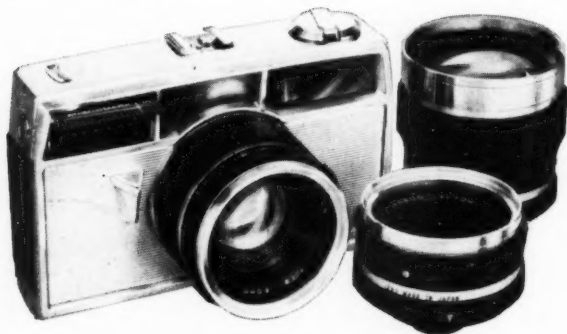


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1. brilliantly...



2. quietly...



SHARP

3. automatically...

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NOW! SLIDE PROJECTION BEGINS

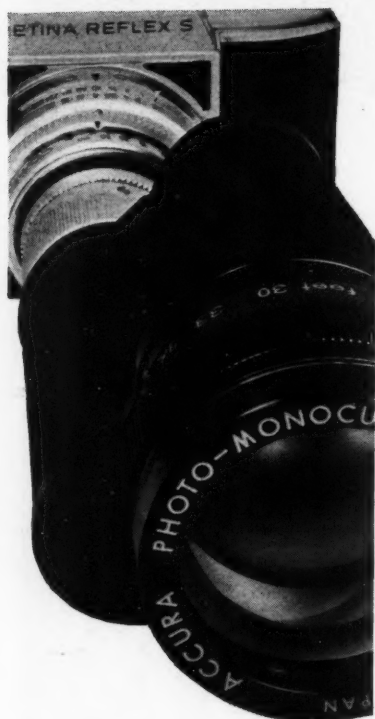
Here's a fully automatic slide system built around the 2 biggest improvements ever brought to slide projection: the metal slide magazine and three-way remote control ■ Begin with the **AIREQUIPT SLIDE MAGAZINE**. It's used on many of the world's most popular slide projectors, because it's the acknowledged, ideal way to keep your slides safe and always ready for showing. Every single slide is protected in its individual metal frame. Dust, bent corners, damaging fingerprints can't happen here. Your slides can't slip out even if you turn over the magazine. The index on each magazine tells you just where each and every slide in your collection is. The Airequipt all-metal magazine is the beginning of every really successful slide show.





& ENDS —WITH THE AIREQIPT SUPERBA 77

It's the last word in **REMOTE CONTROL**. The Airequipt Superba lets you advance or reverse slides and—most remarkable of all—focus the lens from clear across the room. With just the 2-button control unit in the palm of your hand you can join the audience and run the whole show at the same time. The Airequipt Superba is a fine precision instrument, designed for smooth, perfect performance from safe-keeping of slides to sure-focus showing. Ask your dealer to show you all its wonderful features, and you'll see that in slide projection it's the end!



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FEBRUARY 1961, VOL. 25, NO. 2

EVERETT GELLERT, Publisher

AUGUSTUS WOLFMAN, Ed.-in-Chief

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New...F-30 from Braun Hobby

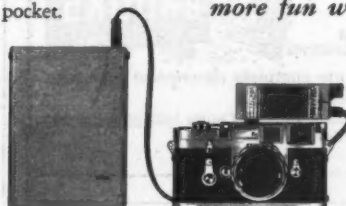
no other electronic flash so small—
so light—so compact...gives you
more high-powered flashes!



NEW! Braun Hobby POCKET-PAK F-30 with new Conservator Circuit has a color guide number *higher* than many heavier...bulkier...more expensive flash units!

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IT LOOKS LIKE A METER**



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*Kodachrome guide number of 35.

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Coffee Break

WITH THE EDITORS

THIS MONTH'S COVER . . .

From a deck of varied articles to suit all tastes, the cover shows a hand of six cards to taste all suits. Top left there's an ace of skis, photographed by Ernst Haas, to introduce our portfolio of winter pictures on page 84. Below it, there's the king of superspeed films, Royal-X Pan, which is now available in 35mm (see page 96.) A joker occupies the middle of the top row: this shot through a multi-lens exposure meter cell is only one of the startling ideas that Norman Rothschild has for making really different color pictures, and you can find the rest on page 66. The smiling queen, middle, bottom row, is a night-time portrait by Bill Ray; other possibilities for shooting first-rate pictures after dark are shown on page 72. The other two cards explain themselves, and we hope you'll find them trumps.

A MULTIPLE RESPONSE . . .

In our November 1960 issue we ran a story on the first successful 35mm camera, Henry Herbert's Tourist Multiple, invented in 1913. With that story we published a notice saying that, since Mr. Herbert did not possess a model of his own invention, MODERN would present a Nikon F to the first reader who sent in a Tourist Multiple in working order.

The response was swift and considerable. As soon as the November issue had appeared, telegrams and letters



ED PETERSON

Camera exchange at Camera Exchange.

came flying in from all quarters. Some of the correspondents admitted that their models were not in working order; others wrote about later types of multiple exposure cameras; but there proved to be a number of Tourist Multiples around that were still going strong at the age of nearly 50.

The first reader to notify us was
(Continued on page 10)

The new, fully automatic **TENAX**



Outstanding
in advanced features
and modern styling



Tenax with
cordless Ikoblitz 4
flash unit

Those who have never taken pictures before get fine results with the TENAX—right from the start. The correct combination of lens stop and shutter speed is set automatically by its built-in light meter. Simply focus at one of three symbols: portrait, group or landscape. Never a doubt about sufficient light—that's assured whenever the light meter needle is visible in the window at top of camera body.

**Tenax is fitted with the famed Zeiss Tessar f/2.8 lens
putting it in a class by itself**

Automatic adjustments can be disengaged to make daylight or flash exposures at B and 1/30 sec. . . . The light meter setting can be locked temporarily when making a close-up reading . . . All mechanical parts are meticulously crafted for precision and reliability.

CARL ZEISS, INC., 485 Fifth Avenue, New York 17

**See TENAX
At leading dealers**

The fully automatic camera with quality appeal

New Sylvania SUN GUN MOVIE LIGHT



makes it easy to take
**GREAT MOVIES
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Here it is — the powerful little movie light that does all the work of a multiple light bar—and does it better! SUN GUN's new kind of lamp lights the scene like the sun. Your movies come out with truer colors, more even lighting and no double shadows. SUN GUN fits any movie camera. See it at your camera dealer's today. Only **\$2495***

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SYLVANIA
Sylvania of GENERAL TELEPHONE & ELECTRONICS

COFFEE BREAK

(Continued from page 8)

Max Waldman, of New York City. "I did have to clean it up a bit," he said, when we inspected his model and found it in excellent condition. Besides all the parts shown in the illustration to our November story, Mr. Waldman's Tourist Multiple was equipped with a pair of magazines and a leather case.

Early one morning, at the Grand Central Camera Exchange (where Henry Herbert is an associate), Mr. Waldman presented his Tourist Multiple to Mr. Herbert. Len Silverman, of Nikon Inc., was on hand with a specially engraved Nikon F for Mr. Waldman. In the photo on page 8, MODERN's managing editor Bill Johnson looks on while Messrs. Herbert (left) and Waldman (right) examine the old and the new cameras.

TIME EXPOSURE . . .

A Canadian reader has sent us a clipping from the London *Daily Mirror* that reads: "Big Ben was three minutes slow for a time yesterday after an American photographer had some of his equipment caught in the works while taking pictures inside the clock tower. Later the clock was put right."

The reader, Mr. T. A. Boyce of Vancouver, goes on to comment: "It just occurred to me that the culprit may have been John Wolbarst, making a time exposure no doubt." Our consulting editor doesn't know why he should be picked upon, and points out that (1) he is always careful with other people's clocks, (2) he is even more careful with his own equipment, and (3) he has never been inside Big Ben.

Incidentally, although the clipping reports a happy ending for Big Ben, we do wonder about that photographer's equipment. We visualize a gadget bag full of lenses, filters and spare cameras slowly being ground between giant gear-teeth.

FORMING FOURS . . .

In each "Monthly Contest" we publish four readers' pictures. Every month we receive about 600 entries from about 200 readers. Those who are statistically minded will see that there's an average of three pictures per reader, and also that approximately five hundred and ninety-six

NEWS FLASH!

Polaroid Corp. has announced a new version of its 4 x 5 sheet film with a daylight exposure index of 3000 and 10-sec. developing time. This brings the 4 x 5 material into line with the recent changes in Polaroid Land roll films.

MODERN will publish a complete report on this interesting new product in a future issue.

pictures are rejected every month, thus disappointing approximately one hundred and ninety-six readers. Still, there's no contest we know of outside *Alice in Wonderland* where everybody wins, and we're happy to find some readers who go on and on submitting pictures, quite undaunted by rejections.

As a matter of interest, we glanced back over the year's records to see how many different countries photos were submitted from. The total came to 53, and covered all five continents (six, if you count North and South America as two). Not surprisingly, all 50 states were represented, plus Canada, Mexico, Puerto Rico and 13 other countries in the Americas. All Western Europe was spanned, from Iceland to Turkey, and there was also one Iron Curtain country, Czechoslovakia. The 14 Asian countries ranged from Israel and Syria in the west to the Philippines and North Borneo in the east; and the total was rounded out by five African countries, Australia and New Zealand.

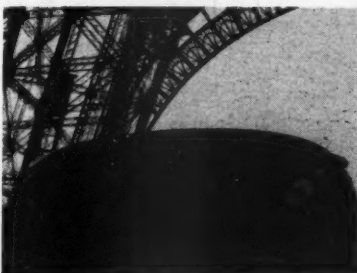
TWO ON A TOWER . . .

Talking about our "Monthly Contest," we were intrigued by a group of pictures submitted to it recently by two young Frenchmen, Jean Beauchesne and Robert Jourdan. Their pic-



ROBERT JOURDAN

New views of the top . . .



ROBERT JOURDAN

. . . and bottom of the Eiffel Tower.

tures were all of a single subject, the most famous and most often photographed of Parisian monuments—the Eiffel Tower. But Messieurs Beauchesne and Jourdan had made a point of choosing unusual angles, and we think they succeeded in bringing new life to a banal subject. We chose one of Jean Beauchesne's photos for the contest (see page 95); two of Robert Jourdan's are shown above.—THE END



"Here,
try it yourself..."

see if it isn't the greatest '35' you ever handled "

"The proof of the pudding is in the eating," goes an old adage. And what applies to puddings should probably apply to cameras as well.

And so, Nikon dealers throughout the country are putting out the 'welcome mat'. They want you to come in and try the Nikon F for yourself. They want you to see why the Nikon F has been consistently receiving 'rave' notices from pros, amateurs, camera editors and columnists—Nikon users and non-users alike.

They want *you* to handle the Nikon F, and put it

through its paces. They want *you* to feel it in action—to discover the confidence that comes with the use of a camera that is so incredibly responsive, so smoothly automatic, you can't help but immediately sense the new command it will give you in every picture situation.

We urge you to visit your franchised Nikon dealer this week. Try the Nikon F Automatic Reflex yourself, and see if it isn't the greatest '35' you ever handled. The Nikon F with f1.4 Auto-Nikkor lens is priced at \$375; with f2, \$329.50. For complete details, write Dept. MP-2.



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Discover how enjoyable picture projection can be with all these conveniences. There are 3 surface outlets for connecting projector, sound, room lamp, etc. A slide switch illuminates viewer window for previewing slides in dark; converts into handy service lite for film threading and needed repairs. Steel table top is dished and covered with washable vinyl. Steel tubular legs are self-leveling. Beautifully finished in rich African brown to match finest home decor. Has many uses throughout the home. For **GIVING** a gift or **GETTING** one, PROJEK-TABLE is a most unusual photo-accessory. See it at your camera shop or write to factory for interesting folder about this and many other ACME-LITE products.

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LETTERS TO THE EDITOR

Pains Relieved

Sirs:

I enjoy reading your magazine very much but two things give me a royal pain: (1) unnumbered pages, of which you seem to have many; (2) omitting the list of advertisers, as you did in the November 1960 issue. Not only should this list not be omitted, it should be noted in the front of the magazine in the table of contents. . . . Why not make it as easy as possible for your readers to look up your advertisers? It's time-consuming and frustrating to have to leaf through pages and pages looking for some advertiser you think you may be remembered seeing in this or that month's magazine. Especially if you don't ever find the ad you were looking for, because it was in another issue. . . . As for the unnumbered pages I can't for the life of me see any reasonable excuse for omitting the number just because Eastman Kodak Co. happens to advertise on pages 8, 9, 10, 11, 12, 13, 14, and 15. And in your table of contents, you go right ahead and refer your readers to some of those pages from 9 to 15 as though they *were* numbered.

Redwood City, Calif.

Allan Metz

Such pages now are numbered. The numbers on those pages with advertisements on the bottom now appear at the top of the page. Omission of the Index of Display Advertisers was temporary. It has resumed its usual place near the back of each issue.—ED.

From One Continent . . .

Sirs:

I buy your publication each month and, as an amateur, derive much pleasure and valuable information from reading it. Your September arti-



C. CHALLIS-SOWERBY

Contrasts in London.

cle "The Well Traveled Camera" regarding the sights of London is especially informative.

I am enclosing some snapshots of the Art Show at Hampstead which can be used to confirm your statement that the artists and visitors are often photographic.

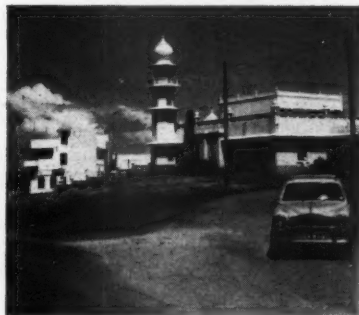
Hampstead, England

C. Challis-Sowerby

. . . To Another

Sirs:

Just a line to let you know that **MODERN PHOTOGRAPHY** is read in East Africa and very highly thought of.



F. H. WESTON

Contrasts in Africa.

The enclosed print of a mosque in Malindi, Kenya, was taken with a Zeiss Nettar, 1/125 sec. at f/16 with Perutz film.

Mtwara, Tanganyika Territory

F. H. Weston

Lasting Beauty

Sirs:

Recently I was confined to a hospital bed for several weeks. I wondered whether the nurses would look as pretty after I got out of the hospital as they do when one is a patient. I asked my wife to bring me my camera, exposure meter, and six rolls of Tri-X. I was not permitted to sit up so she took a reading for me, standing about two feet from the foot of the bed. Rating the Tri-X at 160, I shot at f/4.5 and 1/25 sec. Development was normal with D-23. From a "Patient's Point of View" prone in bed, I took pictures of 96 individuals who attended me (doctors, nurses, interns, aides, dieticians, etc.). I presented each

(Continued on page 14)



A Bargain at \$489⁵⁰

You don't ordinarily think of a \$489.50 camera in terms of a 'bargain'. Yet, when you consider that 'bargain' is another way of saying 'value', another way of expressing how much you're getting for your money, the idea of a Bronica as a 'bargain' begins to make real sense.

One way to determine what and how much the Bronica offers is to examine its features. Comparison will tell you how much more it offers than other cameras. And a personal, in-hand demonstration, at your dealer, will then show you what these features mean in terms of quality and performance.

The Bronica is the only fully automatic, 2¼-square, single-lens reflex in the field. And here are its features:

- instant-return automatic mirror • instant-reopen automatic diaphragm • depth-of-field preview button • interchangeable Auto-Nikkor lenses, standard equipment • 75mm normal lens

- focuses to 19 inches • accepts 50mm-wide-angle lens • focal plane shutter has speeds from 10 seconds to 1/1250th • continuously variable delayed action from 1 to 10 seconds • interchangeable FILMINDER back — remembers whether film has been advanced and whether or not shutter has been wound • FILMINDER back cannot be removed unless dark-slide is fully inserted • dark slide cannot be withdrawn from back while off camera • automatic tension device keeps film taut and flat for exposure — relaxes when film is advanced • auto-reset exposure counter • interchangeable focusing hood • optional equipment: lenses to 1000mm, eyelevel prism finder, FILMINDER backs, extension tubes, filters, lens hoods, cases, etc.

Now visit your Bronica dealer for a personal in-hand demonstration. Bronica with 75mm Auto-Nikkor f2.8 lens, \$489.50. For complete details, write to Dept. MP-2.

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NEW DIFFERENT BETTER



automatic **DYNAMATIC II** WITH EXCLUSIVE 3-CELL LIGHT METER

The 3-cell light meter is in the lens barrel. Each cell meters the light in its own sector; together the three balance the light. The camera sets its own lens opening for any pre-selected shutter speed. Filter-factor compensation is provided automatically. No other automatic has this advanced, improved design. The new Gauthier Prontomatic shutter introduced on the Dynamatic II with speeds from 1/30 to 1/500 is marked with Voigtlander's Script "V" because it is adapted to Voigtlander's own standards. No other automatic has it.

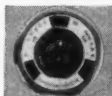
Unlike earlier automatics, the new Dynamatic II not only offers great results in fully automatic use, but also has the full range of performance and manual controls you would expect from a fine 35mm camera.

The Dynamatic II comes with the fa-

mous Voigtlander f/2.8 rare earth Lanthar lens, fully corrected for color. It is an optical masterpiece designed and produced in the Voigtlander plant.

Add it up:

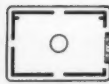
- Fully automatic.
- Full range manual control.
- Coupled rangefinder.
- 1-to-1 viewfinder with f-stops visible in it.
- Exclusive 3-cell light metering system.



Three-cell
light meter



f-stop
indicator



f-stops visible
in viewfinder

See it at your dealer—\$139.50

See the entire Voigtlander family of fine 35mm cameras, from less than \$40.

Sole American Importer, H. A. Bohm & Co., 2814 West Peterson Avenue, Chicago, Illinois

Since 1756

VOIGTLANDER

LETTERS

(Continued from page 12)

an individual print. Yes, each of the nurses and aides is today as pretty as a picture. . . . You'll notice a copy of MODERN PHOTOGRAPHY on my lap. Like



W. W. ANDREWS

Patient's pleasant surprise.

the proverbial doctor's reception room, it was an old copy taken from the lobby and brought to me.

Shaker Heights, Ohio W. W. Andrews

IN NEXT MONTH'S MODERN

How Rolf Winquist photographs girls, girls, girls.

Flying Spiders?

Sirs:

Recently I was photographing some coins from my collection. In the process of doing so a small spider walked across my viewfinder. I use a Contaflex. This occurred on two frames. Naturally, an investigation followed, but no spider could be found in or outside of the camera. Some of my colleagues laughed when this was mentioned. But your item in the November "Coffee Break" was proof—these things can and do happen.

Don't laugh—it could happen to you.
Roselle, N. J. S. Blazewski

Looking for a Market Place

Sirs:

Why don't you (1) print a list of up-to-date newspaper and magazine market places for photos and the kind of photos wanted and the prices paid for them? (2) Print more 2 1/4 x 2 1/4 photography articles on color and black and white pictures? We who have 2 1/4 x 2 1/4 cameras would like to have more.

McGregor, Iowa

Art Hellberg

1. We do—in a book entitled *Where and How to Sell Your Pictures*. It's available from *Amphoto*, 33 W. 60 St., New York 23, N. Y.; \$1.95. 2. We ran special sections on 2 1/4 x 2 1/4 in our April and October 1960 issues and more are on the way.—ED.

MODERN PHOTOGRAPHY

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Visit FRANCE, JAPAN, U.S.S.R., ITALY, MEXICO, etc. in Living Color and Sound

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Now — through the miracle of sight-and-sound travelogues you can explore a different foreign land every month — in your own home — with Charles Boyer, Edward R. Murrow and other famous personalities as your guides!



YOU ARE THERE...
In Italy, gliding down the Grand Canal of Venice in a gondola!

You will stand in the ruins of the Colosseum... attend a colorful Hawaiian "luau"... visit a holy Hindu temple... be serenaded by a Venetian gondolier. You will thrill to the colorful, exciting Aztec Plume Dance in Mexico... walk where Caesar walked and Alexander conquered — and you will stand in the places where history is being made today! You not only see beautiful sights projected in brilliant, lifelike color — you hear Charles Boyer, Edward R. Murrow, or an equally distinguished personality, describe each place you are visiting; you hear, too, that country's music in the background.

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Imagine touring the world with an experienced guide who takes you to all the exciting places you've dreamed of seeing... and reveals the fascinating, little-known corners few tourists ever get to visit!

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You will also receive each month a handsomely illustrated, hard-bound guidebook. It will tell you about the country's history, geography, customs, people and points of interest.

Each of these monthly travel tours — consisting of 32 Colorslides, a long-playing Record and Guidebook — is yours as a Charter Subscriber for only \$3.98.

You may reserve a Charter Subscription and examine the Projector and the Colorslides, Record and Guidebook on France for 10 days before you pay for anything or even decide to subscribe to the Program. Read the exciting details in the coupon at the right. Take advantage of this special **FREE EXAMINATION OFFER**. Fill in and mail the coupon today!



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(please print)
ADDRESS

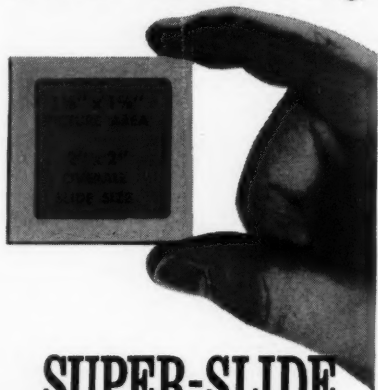
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BEHIND the SCENES

New focal-plane shutter mechanisms may revolutionize 35mm camera manufacture. Here's the first.

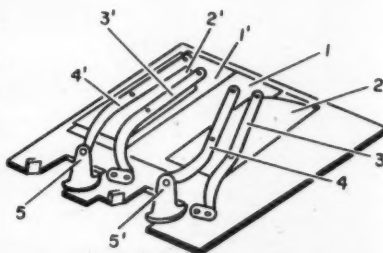
Camera manufacturers using leaf-type shutters purchase their shutters from shutter manufacturers. Focal-plane-shutter camera manufacturers, however, have no such source. If you want to produce a focal-plane shutter camera, you must set about making your own shutter mechanism as well. This is undeniably a major reason for the multiplicity of leaf-shutter camera models and the relative scarcity of focal-plane-shutter camera models.

The situation is about to be rectified to a great extent. Voigtlander in Germany and Copal in Japan will introduce metal focal-plane shutter mechanisms with highly advanced features which can be purchased by camera manufacturers and incorporated into their cameras.

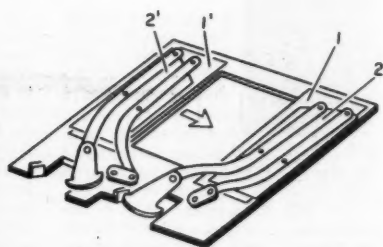
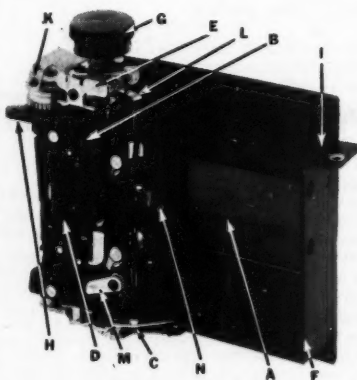
We hope to have full information on

the Voigtlander shutter in the near future. Meanwhile, we do have full specifications on the Copal. It's quite different from the focal-plane shutter we've been accustomed to. In our opinion, it will certainly have a major effect on camera manufacture. Small

(Continued on page 18)



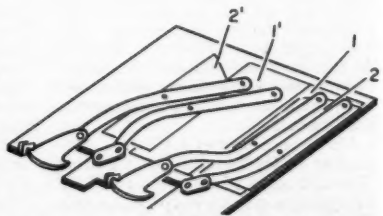
1. Shutter wind: Pair of shutter blades 1, 2 and 1', 2' are held by arms 3, 4 and 3', 4'. Fulcrums of the arms 5 and 5' are spring actuated.



2. Shutter release: Blades 1, 2 run first; blade 1 is folded in under blade 2.

Here's the new Copal Square Shutter:

(A) Metal focal-plane shutter; (B) Cam mechanisms which wind, release and adjust shutter speeds; (C) Slow governor; (D) Self timer; (E) Shutter release lever, automatic sync adjuster behind it; (F) Shutter case; (G) Shutter-speed dial; (H) Bracket to fit on camera body; (I) Bracket to fit on camera body; (K) Pin to release quick-return mirror; (L) Lever to actuate shutter when quick-return mirror is used; (M) Lever to return mirror when shutter operation is over (N) X-synchronization mechanism.

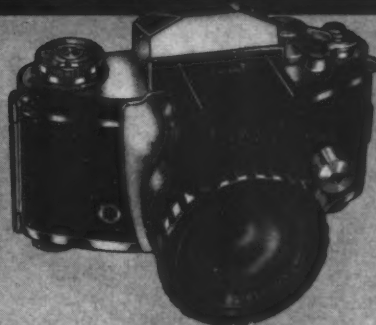


3. Shutter closes: Second pair of blades 1', 2' start after preset delayed time and run across picture area, join blades 1, 2.

NEW EXAKTA BREAKTHROUGH

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Exakta has never changed for the sake of change alone. In the past 25 years, Exakta developed and introduced over 20 basic new features. Today more than ever Exakta represents one of the best, most reliable photographic instruments. This is based on Exaktas 25 years of experience you cannot find in any other camera of its type.

Optically, too, Exakta has no peers, for the world's greatest lens manufacturers constantly strive to surpass each other in creating new, better and sharper lenses always to the unquestionable benefit of the Exakta owner.

The latest optical achievement is Isco's Electric-Eye Isco-Mat lens system which we are proud to present to the family of Exakta photographers. Realizing the problems with exposure meters built into the camera body, the Isco engineers put the Electric-Eye in the lens, an anatomical part of the lens, yet it is easily detachable and interchangeable. You can now buy the Exakta VXIIa camera with the new Electric-Eye Isco-Mat F1.9 standard lens, and you can also get the new Electric-Eye Isco-Mat F2.8, 35mm wide angle lens and Electric-Eye Isco-Mat F3.5, 135mm telephoto lens, with or without exposure meter. These lenses are of the highest caliber and are completely color-matched. If you want to know more about the Exakta and the wonderful, new Isco Electric-Eye lenses, see your Exakta franchised dealer or write for our colorful brochure.

AUTOMATIC EXAKTA VXIIa with Penta Prism Viewfinder and split image Rangefinder with 50mm, F1.9 Isco-Mat LM Electric-Eye lens with fully automatic diaphragm and Exposure Meter. **\$369.50**

ISCO-MAT LM lenses are available alone, as follows:

50mm, Isco-Mat LM F1.9 standard lens with automatic diaphragm and Exposure Meter. **\$150.00**

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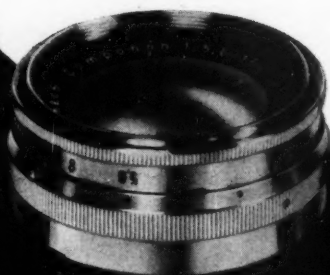


for 35mm

You'll never realize the full capabilities of your enlarger, the wealth of detail concealed in the smallest parts of your negatives, 'till you equip with a COMPONON lens . . . the lens specifically designed by Schneider for critical work. It will give you even illumination, superb image contrast, and overall picture brilliance you've never before achieved. Ask us to send you details on the COMPONON, as well as the budget-priced companion COMPONAR. At leading dealers, for all enlargers and negative sizes.



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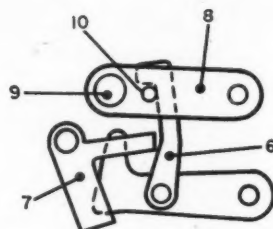
BEHIND THE SCENES

(Continued from page 16)

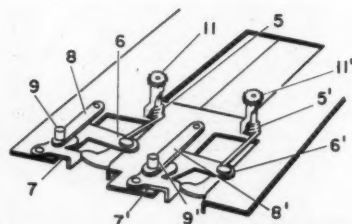
camera manufacturers who, up to now, have been forced to concentrate exclusively on leaf-shutter cameras will in the future make the focal-plane shutter camera market just as hotly competitive as the leaf-shutter camera market is today.

Here is an item-by-item description of the Copal Square shutter:

1. It is a completely separate, independent focal-plane shutter unit which has every necessary mechanism and motive power built in. It fits readily into any kind of 35mm camera, requires a small space (approximately 27 per cent smaller than average built-



Enlarged detail.



Copal setting and release mechanism:

As film is wound, pins 9, 9' on levers 8, 8' are pulled up by means of spiral grooves on camshaft (not shown). Pins 10, 10' on levers 8, 8' pull set levers 6, 6' simultaneously and the metal blades are pulled up. Levers 7, 7' hook ends of arm and set the shutter. When shutter is released pins 9, 9' are pushed down by the grooves and pins 10, 10' give a push to the levers 7, 7' to unhook the arm. Ratchet wheels 11, 11' adjust springs 5, 5' so both pairs of shutter blades travel at proper speed.

in focal-plane shutter) and has simple fittings (one hook on the bottom and two side screws). The shutter release lever is sufficiently large for the release button on the camera itself to be placed in many different positions. Therefore, cameras using this shutter won't necessarily appear similar. Its weight is only 5.4 oz.

2. Four durable paired metal blades are used in the shutter. These are heat- and cold-resistant. (Perfect performance was reported in a test which

(Continued on page 116)

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CAMERA
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- Uses 127 Film
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104⁵⁰
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EASTMAN KODAK MODEL C
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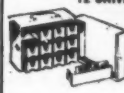
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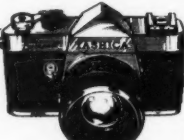
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Guaranteed COATED BINOCULARS



7x50 Ind. Foc. with Case & Straps...
\$189.50*

PLUS 189 S&H Green Stamps

7x50 Professional Binocular-Day or Night Use. Tremendous Light Gathering Power. Separate Focusing Eye-Pieces. Includes Case & Straps.

A size for every purpose

6x30 Ind. Foc.\$15.95*
6x30 Cen. Foc.\$19.95*
7x35 Ind. Foc.\$16.95*
7x35 Cen. Foc.\$24.95*
7x50 Cen. Foc.\$27.50*
10x50 Cen. Foc.\$34.50*
20x50 Cen. Foc.\$39.95*
Get S&H Green Stamps too with every order of Binoculars
* Add 10% Fed. Excise Tax
Shpg. Chg. \$1.50



New! ANSCO Anscomatic Projector

BASS PRICE \$89.95

PLUS 890 S&H Green Stamps

Automatic and Single-Slide Projection • 2-Way Editing

• Automatically projects all 2-1/2" slide mounts.
• Handles 2 1/4" square slides.
• Auto-time, automatic and manual operation.
• Remote control cord, automatic room light switch and iris diaphragm light control.
Shpg. Chg. \$2.00

10% DOWN—12 Months to Pay!

Fabulous Value!



GRUNDIG TAPE RECORDER

Size: 3 1/4" x 5 1/4" x 3 1/4"
Dual Track, Transistor, Battery powered

BRAND NEW \$69.95

Only PLUS 699 S&H GREEN STAMPS
Shpg. Chg. \$2.00

KODAK Motomatic 35



BASS PRICE \$82.50

PLUS 820 S&H Green Stamps

Sold with Case...\$8.95
New! Automatic Kodak 35 camera, spring power drive. Fully automatic exposure.
Shpg. Chg. \$1.50

KODAK Automatic 35



A precision miniature with Electric Eye Control. Takes brilliant color or black and white. Has fast f/2.8 Lens; manual control for flash; easy loading.

BASS PRICE \$67.50

PLUS 670 S&H Green Stamps

Case.....\$8.95
(sold with case only)
Shpg. Chg. \$1.50



BROWNIE Starlette OUTFIT

BASS PRICE \$89.95

PLUS 89 S&H Green Stamps

10 PC's Brownie outfit includes Starlette camera, 1—VP127 film, 4—AG-1 bulbs, 2—pen batteries. Take black & white or color snapshots and color super slides. \$4.95 Case—\$2.95
Shpg. Chg. 50c
Sold with case only

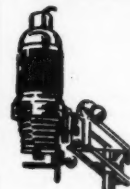
FLASH BULB PRICE CUT!



Westinghouse SAVE MONEY & get S&H Green Stamps

Tool
\$5 Case.....\$12.95 Plus \$120 S&H
\$58 Case.....\$15.95 Plus \$150 S&H
(144).....\$18.95 Plus \$180 S&H
Shpg. Chg. 50c

ENLARGER SALE!



Brand New! Fotolargers

- For all negatives 35mm to 2 1/4 x 3 1/4
- Exclusive distortion control
- Cool Aluminum Lamphouse
- Rotating glassless neg. carrier
- 360° Tilt for horizontal Projection & distortion control

• 2" Forward extension for extreme cropping

Model E w/Diffusion Glass
Without Lens\$44.95 Mfrs. List PRICE 28.50
w/90mm f6.3 lens58.50 36.95
w/90mm f4.5 lens69.95 41.95
w/51mm f4.5 lens (35mm)62.40 39.95

ACCESSORIES FOR MODEL E FOTOLARGERS

4 1/2" Dble Condensors 2 1/4 x 3 1/4\$ 6.39
52mm Dble Condensors for 35mm4.39
3 1/2" Dble Condensors for 2 1/4 x 2 1/44.95
Copy Back (Converts enlarger for Copying) 7.19
Negative Carriers all sizes to 2 1/4 x 3 1/42.95
Copying Lights11.50
Copy Arm1.25
Variam Filter Holder w/filter1.75
Film Cups per pair.....35mm copy work.....2.20
Table Top stand for 35mm copy work.....12.95
Copy Stand with 38" post, for all cameras up to 4x5.....12.95
Enlargers Shipping Price \$3.00

EXAKTA SALE



EXAKTA IIA Body With Waist Level Finder

BASS PRICE \$108.00

PLUS 1080 S&H Green Stamps

Latest Model Exakta IIA includes: waist level finder, 27 shutter speeds. Rapid film wind, fully synchronized for flash. Penta prism rangefinder.....\$20.00
Shpg. Chg. \$1.50

ARGUS 500 Automatic



Takes 35mm Bantam or super slides, 500 watt illumination, powerful blower cooling, complete with one magazine and carrying case.

BASS PRICE \$56.00

PLUS 560 S&H Green Stamps Tool

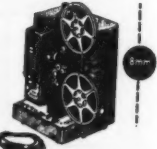
ARGUS 300 automatic.....\$46.00

PLUS 460 S&H

ARGUS 500 electronic.....\$74.50

PLUS 740 S&H
Shpg. Chg. \$2.50

KODAK Sound 8 PROJECTOR



BASS PRICE \$249.50

PLUS 2,490 S&H Green Stamps

shp. chg. \$3.00

Record your own sound!

Now! You can add sound to your 8mm movies—old or new! Put your own commentary and music on your film. The fun is limited only by your imagination! Projector is complete with speaker, microphone, high-illumination lamp, and a switch for forward, reverse, "still."

ARGUS COLOR SLIDE VIEWER



Lights up automatically on large TV-type screen. Orig. List \$7.95

You SAVE \$4.95

Shpg. Chg. 50c
PLUS 49 S&H GREEN STAMPS

BASS PIN UPS!



NEW! AND wonderful!

KODAK RETINA

Automatic III Electric Eye Rangefinder Precision

Electric-eye convenience... rangefinder precision

Now—a automatic exposure 35mm camera built in the Kodak Retina Camera tradition of fine craftsmanship—at this low price! Built-in electric eye sets lens automatically—locks out underexposures. Built-in rangefinder coupled to 45mm f/2.8 lens for needle-sharp pictures. Shutter speeds from 1/30 to 1/500. The heart of a complete photographic system.

(Shpg. Chg. \$1.50) Case.....\$8.95 (sold with case only)

BASS PRICE \$98.50

PLUS 980 S&H Stamps



PHOTO MONOCULAR

7x Magnification (7x50)

BASS PRICE \$35.00

PLUS 350 S&H Green Stamps

49x times increase in area size! For all cameras with Series V or VI adapter rings (with stepdown ring, also for use with Series VII adapter). From 30-ft. to infinity: accepts shade, filters, close-up lenses. For all types of reflex cameras. Color-corrected. Complete with Leather case, straps, Series V & VI fittings.
Shpg. Chg. 50c Specify Camera

Plus S & H GREEN STAMPS!

BY BASS!

LOWEST PRICES . . . TIME PAYMENTS . . .
S & H GREEN STAMPS ON EVERY PURCHASE.

PETRI-PENTA 35mm CAMERA

with f2/50mm Orikkor 7-element Lens

BRAND NEW!

Factory Guaranteed Single Lens Reflex models. Screw-in mount, preset diaphragm, speeds to 1/500.

BASS PRICE PLUS \$79.50
PLUS 790
S&H Stamps . . .

PETRI-PENTA CASE . . . \$11.95
(Sold only with case)
Shpg. Chg. \$2.00



KODAK RETINA IIIC

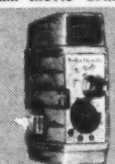


KODAK RETINA IIIC CAMERA
Super-fast f/2 lens, built-in light meter, plus unique interchangeable lens system for wide-angle and telephoto effects. Rangefinder, self-timer, too.

BASS PRICE PLUS \$92.50
240 S&H Green Stamps . . .
RETINA CASE . . . \$9.95
(Sold only with case)
Shpg. Chg. \$2.00

Bell & Howell #252

8mm Movie CAMERA



10mm F:1.9 coated Comat Lens. Continuous run lock; positive winding. Takes color or black-and-white.

BASS PRICE PLUS \$249.50
240 S&H Green Stamps . . .
Shpg. Chg. \$1.00

ONLY 10% DOWN
6.05 CASE . . . \$4.95
(Sold with Case only)

KODAK Retina Reflex 3 Camera



Top precision in a pentaprism reflex. Features interchangeable lenses from 28mm to 135mm. Built-in exposure meter couples with all lenses. Shutter-lens linkage. Precision full-area pentaprism viewing.

BASS PRICE PLUS \$159.50
1590 S&H Green Stamps . . .
RETINA CASE . . . \$11.95
(Sold only with case)
Shpg. Chg. \$2.00

CUT PRICE SALE

Brownie 8mm Movie



Brownie Movie Camera, Turret, f/2.8. Regular movies, telephoto shots, wide-angle views.

BASS PRICE PLUS \$35.50
Plus 355 S&H Green Stamps . . .
\$6.50 FIELD CASE \$4.95
(Sold with case only)
Shpg. Chg. \$1.50

KODAK Signet 80



Offers finest in 35mm cameras: photoelectric meter, rangefinder, easy loading, f/2.8 lens, push-bar film advance, EVS settings. Takes wide-angle, telephoto lenses.

BASS PRICE PLUS \$64.75
PLUS 640 S&H Stamps . . .

Signet 80 CASE . . . \$11.95
90mm F/4 Signet Tele. Lens . . . \$41.50
35mm F/3.5 Signet w/A Lens . . . \$39.50
Shpg. Chg. \$2.00

REVERE CA-7 Cine-Zoom CAMERA



ELECTRIC EYE-MATIC 8mm SPOOL-TYPE with New AUTOMATIC BACK-LIGHT COMPENSATION
Get precision Normal, wide-angle and telephoto lens coverage. Features WOLLENSAK f1.8 Rapier Lens, extra-large viewfinder, long-run motor, continuous run. Light-weight magnesium body.

BASS PRICE PLUS \$89.50
895 S&H Green Stamps . . .
Tool . . .
Compartmented CASE . . . \$11.95
(Sold only with case)
Shpg. Chg. \$2.00

ONLY 10% DOWN

AUTOMATIC SLIDE PROJECTOR KODAK CAVALCADE Model 520



Changes slides at selected intervals. Also changes by remote control - manually advance and reverse. Even edit in case with "reverse" screen. 300-watt Lamp.

BASS PRICE PLUS \$82.50
PLUS 825 S&H Green Stamps . . .
NOW! Kodak 300 with Universal Changer . . . \$47.50

Shpg. Chg. \$2.50

NEW & USED SPECIALS 35mm CAMERAS

Description	BASS PRICE
Kodak Signet 30 F/2.8 (New)	\$19.95
Argus Matchmatic Kit	\$9.50
Argus C-4 Kit (New)	\$9.50
Beau Lightomatic F/1.9*	\$9.50
Canon F (Body)*	\$29.50
Canon Flex F/1.8*	\$74.95
Contax IIA F/2.8 Sonnar	\$199.95
Contax IIA F/1.5 Sonnar	\$199.95
Contaflex Super F/2.8*	\$119.50
Exakta IIA F/2.8 Auto Biotar	\$48.50
Fujica F/2.8 35M*	\$29.95
Kodak Signet 40 w/flash (New)	\$47.95
Kodak Signet 60 New	\$64.75
Konlette	\$16.95
Leica M-3 (Body)	\$199.00
Minolta 35	\$29.95
Nikon SF (Body)*	\$345.00
with F/1.1 Nikkor Lens (Used)	\$56.00
Olympus Auto Set*	\$62.50
Olympus Auto Wide*	\$34.95
Petri F/2.8 Green-O-Matic New	\$47.95
Petri F/1.9* (Greenomatic) New	\$98.50
Retina IIIS F/2.8	\$62.50
Voigtlander Vitomatic I*	\$139.50
Voigtlander Bessamatic	(Sold with case only)
Zeiss Ikon Contaflex	(Sold with case only)

(Case extra add \$10.00)

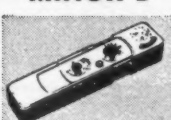
TWIN-LENS CAMERAS

Description	BASS PRICE
Minolta Autocont*	\$79.95
Minolta Autocont L*	\$119.50
Rolleiflex 2* (Used)	\$186.00
Rolleiflex 4x4*	\$99.50
Yashica A*	\$49.50
Yashica Mat*	\$99.50
Polaroid 800 Set*	\$99.50
Polaroid 95B*	\$99.50

* Used

Get S & H Green Stamps on these too!

MINOX B



Sub-Miniature (Latest Model) F/3.5 Lens, focusses from 8" to infinity, speeds from 1/2 to 1/1000 seconds. Built in exposure meter in A.S.A.

BASS PRICE PLUS \$98.00
PLUS 980 S&H Green Stamps . . .
Case & chain \$6.95
Shpg. Chg. \$1.50

10% Down 12 months to pay
(Sold only w/case & chain)

TRIPOD SALE

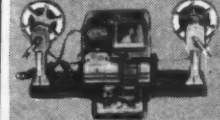
Get 80 S&H Stamps



NOW ONLY \$845

Dusco 3 section with lift. 60" open, 19" closed, 14" elevator.
Shpg. Chg. \$1.

MANSFIELD EDITOR



All die-cast constructed, with automatic splicer, 400 ft. rewinds. Brilliant 2 1/4" x 3 1/4" picture screen.

GET 170 S&H Green Stamps \$1795
17mm Editor \$25.95
Shpg. Chg. \$1.50

ARGUS M750 ZOOM LENS 8mm MOVIE PROJECTOR



BRAND NEW! F/1.8 lens zooms from 15mm to 28mm for wide range picture sizes. 400-ft. reel capacity. Blower cooled. Shows still, forward, reverse. Includes Argus Splicer.
BASS PRICE PLUS \$74.50
740 S&H STAMPS
Shpg. \$2.00

QUALITY CAMERAS SINCE 1910

BASS Photo Post
WE GIVE
S & H GREEN STAMPS

10% DOWN - 12 MONTHS TO PAY

CAMERA CROSSROADS OF THE WORLD!

A Superb Instrument—
A Spectacular Price!

8mm SPIDER TURRET REXER

with WOLLENSAK CINE RAPTOR 13mm F/2.5 LENS

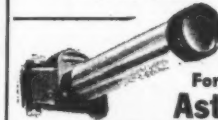
Electric Motor Runs Continuous
Zoom Finder 8.8mm to 78mm
Variable Speeds

BASS PRICE PLUS \$59.50
590 S&H Stamps . . .

REMOTE CONTROL LINE . . . \$5.75
Shpg. Chg. \$1.50



10% DOWN



Sensational New
Light Weight . . .

For Exaktas or Praktikas

Astronar 400mm

f/7.5 TELEPHOTO LENS

FOR MOST 35mm SINGLE LENS CAMERAS

A fifth the weight of ordinary lenses for Hand Held Use, 6X Magnification High Resolving Power. 1400 lines/in.

(Specify Camera) Add \$1.00 Shpg. Chg.
6X Photo Monocular for Contaflex . . . \$29.95

4x5 CROWN GRAPHIC (Latest Model)



Acclaimed by Newspapormen, Professionals and Amateurs, Alike!

Includes Crown Graphic 48 with Graphic Rangefinder, Grafalite Flash Bracket and 135mm Schneider Xenar F/4.7 Lens with flash Synchro Compur Shutter; Graflok Back has Extalite Field Lens.

EASY TERMS UP TO 24 MONTHS TO PAY
Down payment
\$2000
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What's TOP allowance for my _____

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ZEISS Contaflex ALPHA

Zeiss F2.8 interchangeable lens, MX Synchro Shutter, Self timer. Through-the-lens focusing. R. F. prism. Case 9.50.

BRAND NEW... \$6750



BINOCULAR MICROSCOPE

30X and 50X Objectives. Adjustable eye pieces. Wood case w/slide drawer.

BRAND NEW... \$1895



8mm ACTION EDITOR

Bright Viewing Screen. 400' foot capacity. Self contained case.

BRAND NEW... \$1395



KONICA S

F1.8 Hexar lens, coupled Exposure Meter, MX synch. Lever wind advance, parallax corr. viewfinder-rangefinder, autom. zero re-set. Mail OLDEN coupon.



AGFA OPTIMA I

Fully autom. Electric eye 35mm camera, Red-Green exposure control signal, F2.8 lens. Trade & SAVE.



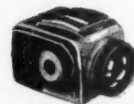
AGFA OPTIMA IIS

Fully autom. Electric eye 35mm camera, coupled Rangefinder, F2.8 lens, Prontormotor shutter, ASA 10 to 250. Mail OLDEN coupon.



OLYMPUS PEN

Smallest camera using standard 35mm film, shutter to 1/200, synch. F3.5 lens, luminous Golden Frame Finder. Mail OLDEN coupon.



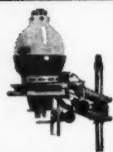
BRONICA

2 1/4 x 2 1/4 SL Reflex, F2.8 autom. diaphragm Interchange magazines. Mail OLDEN coupon.



AIRES VISCOUNT M2.8

Autom. coupled Exposuremeter, F2.8 Q-Coral lens, Seikosha shutter, single lever wind, coupled Rangefinder. Trade & SAVE.



BOGEN COLOR 66

2 1/4 x 2 1/4 to 35mm Enlarger, compl. interchangeability of lenses, condensers & neg. carriers. Convection ventilation. Mail OLDEN coupon.



DURST 806

8mm to 2 1/4 x 2 1/4 enlarger, friction drive, distortion corr., double condenser.

DURST 404

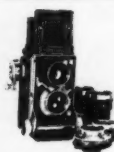
35mm to superslide Enlarger & copy-camera compact, built-in filter drawer. Trade & SAVE.



AUTO ROLLEIFLEX F

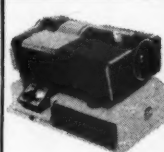
Shutter-coupled Exp. meter, new brilliant screen, MXV synch. F2.8 or F3.5 lens. Mail OLDEN coupon.

LET'S TALK
PRICE
WRITE TO
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MAMIYAFLEX C2

Only twin-lens Reflex with interchangeable lenses, MX synch. shutter, focus from inf. to 7". Trade & SAVE.



REALIST 990

Autom. slide projector, built-in Timer, 500W, blower, remote control. Mail OLDEN coupon.



BESELER DREAM DARKROOM

Beseler 23C enlarger, easel, varigam filters, 3- trays, dev. tank, timer, thermom. developer, fixer, safelite, etc. Trade & SAVE.



SUPER LINHOF IV

150mm, Symmar F5.6 lens, multifocus prism rangefinder. Ektalite field lens, triple extension, Anatomical grip. Mail OLDEN coupon.



LINHOF PRESS 23

Interchangeable lenses couple autom. to Rangefinder-Viewfinder, parallax corrected, anatomical grip with built-in shutter release, MX synch. Trade & SAVE.



B&L BALOMATIC 755

Only auto. 2 1/4 x 2 1/4 and 35mm projector, non-spill trays, forward and reverse with single button control. Remote control. Mail OLDEN coupon.



MINOLTA 16

Subminiature, F2.8 lens, speeds to 1/500, synch. autom. filmcounter. Trade & SAVE.



DE JUR ZOOM ELECTRA

Fully automatic electric eye 8mm movie camera with F1.8 zoom lens, "Eyelid" protects photocell. Mail OLDEN coupon.



SEKONIC ELMATIC 8

3 lens turret, electric eye F1.9 lenses w. match. finders, built-in filters. Trade & SAVE.



SEKONIC 30C

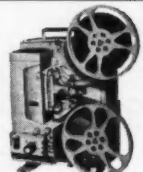
8mm Movie Projector, F1.4 W. A. lens, 500W., forward, reverse, var. speeds, 400 ft. capacity, case. Mail OLDEN coupon.



ZEISS

PRO-TESSAR LENSES

For Contaflex III and IV, Rapid & Super. 35mm Wide angle, 85mm Telephoto. Trade & SAVE.



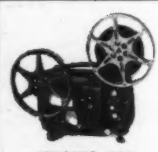
DE JUR AMBASSADOR

Autom. loading 8mm projector with zoom lens, forward, reverse, var. speeds. Mail OLDEN coupon.



CANON REFLEX ZOOM 8

F1.4 hi-speed, 10-40mm zoom, built-in exp. meter, reflex focusing. Trade & SAVE.



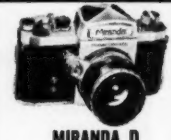
SEKONIC 80P

8mm projector with F1.6 zoom lens, single switch for forward and reverse, direct-light system with 8V-50W lamp, var. speeds, compact. Mail OLDEN coupon.



CONTAFLX SUPER

Built-in photo-eye, rapid-wind lever, MXV shutter, Tess. F2.8 self-timer. Trade & SAVE.



MIRANDA D

F1.9 autom. lens, instant return mirror, pentaprism, rapid film advance, synch. shutter. Mail OLDEN coupon.



NIKON F

Automatic reflex, Nikkor F2. instant mirror return, depth-of-field previewer, single stroke film advance. Trade & SAVE.



BESELER TOPCON C

F1.8 Auto-Topcon, focus to 18", speeds 1 to 1/1000, interch. prism with split-image rangefinder, rapid return mirror, lever-wind advance.



CANONFLEX

Fully automatic, instant mirror return, F1.8 lens, coupled exposure meter. Trade & SAVE.



ZEISS CONTAREX

Fully autom. single-lens reflex, shutter-coupled exposure meter, prism finder with split-image rangefinder, rapid-wind lever, self-timer. Mail OLDEN coupon.



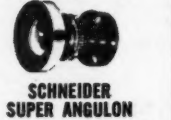
YASHICA PENTAMATIC

6-element F1.8 autom. lens, instant-return mirror, single-stroke lever, Pentaprism, X and FP synch. Trade & SAVE.



ZEISS MONOCULAR

8 x 30, increases focal length 8x, converts normal lens to 400mm telephoto, focuses down to 7 ft. Lightweight. Mail OLDEN coupon.



SCHNEIDER SUPER ANGULON

Sensational 6-element wide-angle lens, improved sharpness, contrasts, decreases astigmatism and field-curvature, 100° angle at full aperture. Trade & SAVE.



SCHNEIDER SYMMAR

6-element commercial lens, medium speed and wide angle, excellent definition and contrast, high color correction, rendition of finest details. Mail OLDEN coupon.



MEC 16 SB

Subminiature camera, coupled exposure meter, autom. film transport, speeds to 1/1000, F2.8 or F2 lens. Trade & SAVE.



MINOLTA SR I

6-element F2 lens, autom. inst. return mirror, prism, FP & X synch. Minolta SR III F1.8 lens, exp. meter coupled to shutter dial. Mail OLDEN coupon.

OLDEN CAMERA CO 1265 BROADWAY NEW YORK 1 N.Y.

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enlarger,
filters, 3-
ink, timer,
flop, fix,
etc. Trade

A 16
F2.8 lens,
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counter.

80P
with F1.6
gle switch
d reverse,
p, var.
ect. Mail

gle-lens
coupled
prism
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mid-wind
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mirror,
synch.
s lens,
pled to
OLDEN

8mm MOVIE		
BAH Sportstar, 134V, F2.5, excellent	used	15.00
BAH 1347A, Turret, F1.9, hi-speed	NEW	59.50
BAH 172A, Turret Mag, F2.5	used	19.50
BAH 330, Electric Eye, F1.9, fully auto	used	38.50
BAH 330E, Electric Eye, 3 lenses	used	38.00
BAH 414, Zoom EL	used	118.50
Bolney 8, F1.8, var. speed, still	NEW	29.95
Camex 8 with Pan-Cinor Zoom lens	used	165.00
Canon Zoom 8, Reflex, Exp. Meter	used	139.00
DeJury Embassy, Mag, F2.5, var. speed	NEW	19.00
Keytone Cap, roll, F2.5	used	14.75
Kodak Mag. 8, F1.9, foc. mount	used	12.00
Kodak Medallion, Mag, F2.5	used	15.00
Konica Zoom, battery-drive	used	96.00
Revere 84, Turret, F1.9, roll, var. speed	used	24.00
Revere CA-1, Electr. Eye, F1.9	used	29.50
Revere CA-1, Electr. Eye, Zoom	NEW	79.00
Revere CA-4, Mag, 3-lenses EL Eye	NEW	72.00
Revere 44, Mag, Turret, F2.5	NEW	39.50
Sekonic Elmatic, F1.9, 3 lenses	used	49.00
Wittnauer Cine-Twin, camera & proj.	used	79.50
Wollensak 23, Turret, Mag, 3 lenses	NEW	48.00
Wollensak 72, Mag, F2.5, discontinued	NEW	19.00
DeJury Ambassador projector	used	88.00
Kodak 8mm Sound projector	used	218.00
Sekonic 300 projector forw., reverse, var. speed	used	42.50
Baskon 500W projector	NEW	24.50
Elite, 8mm sound proj., microphone, etc.	used	142.00
Zoom lens for 8mm projectors	NEW	12.50

LENSES FOR 8mm MOVIES		
6.5mm W.A., F2.5	NEW	9.50
1 1/2" Wollensak F2.5	NEW	3.95
1 1/2" Telephoto F2.5	NEW	4.95
1 1/2" Hi-speed F1.4 tele	NEW	16.50
Zoom lens for 8mm	NEW	35.50
Elite Synchronizer Electric Eye lens for all 8mm cameras, F1.9	used	17.50
Wollensak Wide Screen	NEW	13.95

16mm MOVIE		
BAH 70, F2.7, 100' roll	used	28.00
BAH 70DE, Turret, F1.9, 100'	used	98.00
BAH 70DE, F1.9, optical finder	used	24.00
BAH Auto-Master, Turret Mag, F2.7	used	28.00
BAH 200E, F1.9, Electric Eye Mag	used	114.00
Cine Special I, F1.9, 100' Mag	used	174.00
Cine Special II, F1.9, 100' Mag	used	378.00
Kodak Mag. 16, F1.9	used	19.00
Kodak K100, F1.9, 100' roll	used	128.00
Pathe 16, F1.9, 3-lens turret	used	174.00
Revere 29, Rapier, Turret, Magazine	used	128.00
BAH Diplomat, 750W projector, case	used	148.00
Ampro Premier, 750W projector, case	used	148.00
BAH Utility, sound proj. 12" speaker	used	119.00
BAH 202, Magnetic & Optical Sound	used	335.00
Kodak Pagant sound, 750W, case	used	148.00
Ampro Compact sound projector	used	99.50
Victor 40, F1.9, 100' roll, speed	used	85.00

LENSES FOR 16mm MOVIES		
13mm Elgset F1.5 W.A.	used	38.50
17mm Kodak F2.7 W.A.	used	17.00
17mm Rapier F2.7 W.A.	used	28.50
1" B&H F2.7 lens	NEW	28.50
1" Wollensak F1.9, foc. mt.	used	19.50
1" Kodak Ektra F2.7	used	10.50
63mm Kodak F2.7 telephoto	used	10.50
3" Steinheil F3.5, telephoto	used	46.50
3" Steinheil F1.9, hi-speed, telephoto	NEW	46.50
4" Kodak F2.7 telephoto	used	38.50
Vitascopic Wide Screen	NEW	38.50

35mm CAMERAS		
Alpa 7, Reflex F1.9, MX	used	142.00
Anahi Pentax F2.2, synch.	used	68.00
Argus C3, F3.5, synch. Rdr.	used	14.50
Argus C4, F2.2, synch. Rdr.	used	29.50
Braun Automatik, Reflex, Exp. meter, synch	NEW	89.50
Exakta VX IIA, Blotar F2	used	118.00
Exakta II, Blotar F2, synch.	used	49.50
Canonflex F1.8 auto, inst. mirror return	used	178.00
Canon V1, F1.8, Exp. Meter, synch	used	138.00
Contax II or Contax III, Sonnar F2, Rdr.	used	82.50
Contax IIB, Exp. meter, synch. Rdr., body	used	98.00
Contaflex, Sonnar F2, Exp. meter, self-timer	used	56.00
Contaflex I Tess 2.8 MX	used	56.00
Tele & W.A. set for Contaflex I & II	NEW	19.50
Contaflex Alpha, F2.8, MX	NEW	67.50
Contaflex Super, Exp. Meter	used	112.00
Contarex, latest, Exp. meter cpld.	used	204.00
Edixa Reflex B, F2.8, MX synch.	NEW	66.00
Edixa Reflex C, Exp. Meter, F1.9	NEW	129.50
Esa Reflex, F2.8, MX synch.	used	29.50
Esa II, latest, Tess. 3.5 prism finder	NEW	79.50
Kodak Ektra, Ektra F1.9, synch. Rdr.	used	79.50
Extra magazine for Kodak Ektra	used	24.00
Holland Pentax, F2.2 auto, prism finder	used	112.00
Kodak Signet, 80, latest	NEW	99.50
Leica G, F2.2 cld. Blotar F2	used	118.00
Leica IIIC, Rdr. 1 sec. to 1/1000, body only	used	32.00
Leica IIIF, Summitar F2, Rdr. synch.	used	62.50
Leica M-2, Elmar F2.8	used	182.00
Leica M-3, Summilux F2	used	190.00
Leica IIF, Summilux F2, per. Rdr.	used	48.00
Mercury II, F2.7, synch. single frame	used	13.50
Minolta SR, Reflex, F1.8 auto	used	108.00
Miranda D, Reflex, auto, F1.9	used	32.00
Nikon S, Rdr. synch. body only	used	32.00
Nikon S2, Lever-wind, body only	used	112.50
Nikon S2, Nikkor F1.4	used	112.50
Nikon SP, latest, Nikkor F1.4	used	198.00
Nikon Reflex F, Nikkor F2	used	118.00
Praktika FX3, Auto-Westanar F2.8, MX	NEW	83.50
Praktika FX, F2.2 auto, MX	NEW	83.50
Retina IIIC, Xenon F2, Rdr. MX, Exp. Mtr.	NEW	92.50
Retina III S, F2.8, Exp. Meter Rdr.	NEW	86.50
Retina Reflex 8, F2.8, V8, Exp. meter	NEW	86.50
Retina Reflex S, F1.9, Exp. Meter LV8	NEW	182.00
Robot Reflex, Xenon F2, MX, meter	used	98.50
Robot S2, Lever-wind, body only	used	98.50
Robot Royal 24, Xenon 1.9, Rdr.	used	98.50
Super Beauty II, F1.8, MX	used	46.50
Voigt. Prominent, Ultron F2.8, MX, Rdr.	used	112.50
Voigt. Besamatic, Reflex, F2.8, Exp. meter	used	26.00
Voigt. Vitessa, Sonnar F2.5, Rdr.	used	26.00
Voigt. Vitessa T, F2.8, Exp. meter	used	46.50
Voigt. Prominent, Nikkor F1.5	NEW	39.50
Tele or W.A. lens for Prominent	used	39.50
Wittnauer Electric, fully auto	NEW	27.50
Zelma Tensar Super Dollinar Rdr.	NEW	27.50

REFLEX CAMERAS		
2 1/4x3 1/4 Graflex B, F4.5	used	32.00
3 1/4x4 1/4 Graflex, F4.5	used	38.00
Super II Graflex, Ektra 4.5 auto	used	58.00
3x7 Graflex Home Portrait, F8	used	148.00
Auto Rolleiflex, Tessar 3.5, Compur	used	38.50
Auto Rolleiflex, Tessar 3.5, MX synch.	used	59.50
Auto Rolleiflex, T. LV8	used	97.00
Auto Rolleiflex 3.5 G, F3.5 LV8, Exp. meter	used	124.00
Auto Rolleiflex 3.5 G, Xenotar F2.8, MX, synch.	used	99.50
Rolleicord IV, Xenar 3.5, MX	used	39.50
Rolleicord V, Xenar 3.5, LV8	used	46.50
Rollei Duonar telephoto	used	39.00
Rolleimeter for F3.5	used	142.00
Rollei Sports ruler	used	4.99
Auto Rolleiflex 3.5 F, latest	used	148.00
Rollei Flash, R.C.	used	4.50
Rolleiklin, 35mm attachm.	used	12.50
Romaflex 1 1/2x1 1/4 single lens F2.8 synch.	NEW	298.00
Kalimar Single-lens Reflex F3.5	used	42.50
Optika Reflex, F2.8	used	88.50
Minolta Autocord, auto, F3.5, MX	used	44.50
Manlyflex Pro C, F2.8 MX	used	88.50
Optika Reflex, F2.8	used	88.50
Yashica "A" F3.5 synch.	NEW	19.50
Yashica 4x4, latest F3.5, synch.	used	37.50
Rolleiflex 4x4, latest F3.5, synch.	used	47.00

LENSES FOR SINGLE-LENS REFLEX		
28mm Auto-Angelux F4 W.A.	used	88.00
30mm Eurygon F2.8 W.A.	NEW	33.00
30mm Eurygon F2.8 auto, for Ex.	NEW	76.50
35mm Angenieux F2.5 W.A.	used	33.00
35mm Steinheil Calumag W.A.	used	19.50
35mm Auto-Travegon F3.5 W.A.	NEW	48.00
35mm F1.8 right angle	NEW	15.50
35mm Auto-Westanar F2.8 for Ex.	NEW	32.50
35mm Auto-Quinon F1.9	used	64.50
38mm Auto Blotar F2	used	44.00
38mm Blotar F2, pre-set	used	174.50
135mm Jupiter F2.8 for Exakta	NEW	28.00
135mm Tele-Quinar F2.8	NEW	54.00
135mm Tele-Quinar F3.5 auto	used	19.50
135mm Tele-Picon F3.5, pre-set	used	22.50
135mm Tele-Xenar F3.5 auto	used	14.50
180mm Sonnar F2.8 Olympic, pre-set	NEW	188.00
200mm Tele-Quinar F4.5	NEW	49.50
200mm Tele-Picon F3.5	NEW	28.00
240mm Tele-Ennalyt F4.5	NEW	72.00
280mm Tele-Picon F4.5, pre-set	NEW	98.00
300mm Steinheil F4.5 pre-set	NEW	88.00
300mm Zeiss Sonnar, Olympic, F4	NEW	238.00
400mm Tele-Picon F3.5	NEW	12.00
500mm Teve F3.5	NEW	178.00
500mm Tele-Vision, lightweight	used	83.00
Voigtlander Zoom lens F2.8	used	154.00

SLIDE PROJECTORS		
Argus 545, auto, 500W, case	NEW	43.80
BAH Headliner, 300W, blower	used	24.50
BAH Explorer, 500W, case	used	48.00
BAH Robomatic 500W, case	used	98.00
Kodak Signet auto, blower	used	19.50
Color Tech 500W, blower	used	19.50
Quick-set 303, auto, 300W	used	27.50
Realist 400, auto, 300W	used	15.50
Revere 888D, 500W, auto, Timer	NEW	79.50
TDC Duo, 2 1/2x2 1/4 & 3 1/2, blower	used	39.50

MISCELLANEOUS		
Golden Ricoh 16, F3.5, synch.	NEW	9.95
Mamiya Super 16, Subminiature	NEW	23.95
Minox III, F3.5, synch.	used	47.75
Minox B, built-in Exp. Meter	used	22.95
Copy-stamp for Leica, Canon, etc.	NEW	32.00
BAH 775G Tape recorder	used	98.00
Revere T304 Stereo Tape recorder	used	139.50
Revere 71120 Stereo Tape recorder	used	118.50
Norwood Super Director w/case	NEW	11.95
Rapid-Write for Leica, Contaflex	used	1.95
Leita Focalslide copying attachm.	used	24.50
Kliff Reflex housing	used	24.50
Extension bellows for 3.5 Reflex	used	13.95
Kodak Stereo, F2.5, synch.	NEW 25.00	used 14.95
Stereo Realist, F2.5, Rdr.	used	32.00
Revere Stereo, F3.5, Rdr.	used	39.50
Wollensak Stereo, F2.7, Rdr.	used	69.50
Viewmaster Stereo camera	used	24.00
TDC Stereo projector, 500W, blower	used	98.00
Steinheil W.A. lens for Stereo	used	34.00
Polaroid Rdr. rotating	NEW	3.95
Anaco Elevator Studio Tripod	NEW	1.95

LENSES FOR NIKON, CONTAX		
21mm Biogon F4.5 Super W.A.	used	107.50
25mm Nikkor F4.5 W.A.	used	86.00
35mm Komura F2.8 W.A.	NEW	29.50
35mm Nikkor F3.5 W.A.	used	47.50
35mm Nikkor F1.8 Speed W.A.	used	98.00
35mm Zeiss Bioton F2.8 W.A.	used	48.50
50mm Zeiss Sonnar F1.5	used	48.00
50mm Nikkor F1.1, high-speed	used	18.00
55mm Nikkor F2.8 telephoto	used	68.50
85mm Zeiss Sonnar F2, tele	used	49.50
105mm Nikkor F2.8, for Contax	NEW	78.71
135mm Komura F3.5 telephoto	NEW	39.50
155mm Nikkor F3.5 telephoto, for Contax	NEW	99.50
180mm Sonnar F2.8 with Red. Ang.	used	148.00
35mm Rangefinder Sonnar F3.5	used	18.00
300mm Zeiss Tele. for Contax	used	68.00
Zeiss Universal Viewfinder, latest	used	42.00
Zeiss Contax filters, all colors	used	1.75

LENSES FOR LEICA, CANON, Etc.		
21mm Super Angulon F4.5 W.A.	used	137.50
28mm Summaron F3.5 W.A.	used	82.00
28mm Nikkor F3.5 W.A.	NEW	74.75
28mm Hektor F3.5 W.A.	used	33.00
35mm Rangefinder Sonnar F3.5	used	18.00
35mm Summaron F3.5 W.A.	used	38.00
35mm Summicron F2 Rdr. for M3	used	148.00
50mm Summarit F1.5, screw or bayonet	used	48.00
50mm Summilux F1.4	used	136.00
55mm Steinheil F2.8	NEW	29.50
55mm Nikkor F2.8 telephoto	used	48.00
55mm Summarex F2.8	used	48.00
90mm Summicron F2.8 screw or bay.	used	168.00
90mm Elmar F4 collapsible for M2 & M3	used	68.50
90mm Elmar F2.8 right angle	used	31.00
90mm Elmarit F2.8, screw or bay.	used	94.50
105mm Nikkor F2.8	used	118.00
135mm Komura F3.5 telephoto	NEW	49.50
135mm Hektor F4.5 telephoto	used	58.00
Leita Vitaflex, all colors	used	84.00
400mm Telet F4.5, for Vitaflex I or II	used	268.00
Leita Universal Viewfinder	used	48.00
Leita Vidom, chrome	used	6.50
Leita Vitaflex Reflex housing	used	48.00
Leita filters, all colors	used	7.50
Leita Ceyo flashgun	used	9.50
35-50-90-135 Luminous finder, each	NEW	4.95

PRESS, VIEW & ROLLFILM CAMERAS		
4x3 Linhof IV, Xenar 4.5, latest	used	329.00
4x3 Linhof III, Xenar 4.5, synch. Rdr.	used	188.00
4 1/2x3 1/4 Linhof Super, Xenar F2.8	used	226.00
2 1/2x3 1/4 Linhof Press, F2.8	used	359.00
2 1/2x3 1/4 Bunch Press, F2.8	used	31.00
2 1/2x3 1/4 Ann. Speed Graphic, Tess. 4.5	used	36.00
3 1/4x4 1/4 Speed Graphic Tess. 4.5	used	39.50
4x5 Speed Graphic	used	124.00
4x5 Super Graphic F4.7, electr. shutter	used	189.50
4x5 Packemaker Speed F7, Rdr.	used	118.50
8x7 Linhof, Xenar 4.5, Rdr.	used	185.00
2 1/2x3 1/4, 4x5, 5x7 & 8x10 Pinaflex View camera	NEW from	148.00
8x10 B&H View camera	NEW	78.00
Kodak Chevon Ektra 3.5, Rdr.	NEW	34.50
Omega 120, F4.7, synch. Rdr.	used	168.00
Flammar 100, F2.8, Rdr.	used	78.00
Polaroid 80, picture in 10 seconds	used	32.00
Polaroid 95, 3 1/4x4 1/4, synch.	used	36.00
Polaroid 110, F4.7, synch.	used	82.00
Polaroid 110, Rdr. complete kit	used	82.00
Polaroid Exposure Meter 23B	NEW	4.85
Medallist II, Ektra 3.5 synch.	used	124.00
Mamiya 6, F3.5, synch. Rdr.	used	48.50
Super Ikonta B, Tess. 2.8, Rdr.	used	45.00
Super Ikonta B, Exp. Meter	used	89.50
Voigtlander Desma II, F3.5 synch.	used	78.50

LENSES FOR PRESS & VIEW		
5 1/4" Graflex Optar F4.7, Graphex synch.	used	15.00
6" Kodak F4.5, Supermatic	used	27.50
7" Aero-Ektra F2.5	used	28.00
8" Kodak Ektra F2.5, Flash-Supermatic	used	59.50
10" Commercial Ektra F6.3 synch.	used	149.50
90mm Angulon F6.8 W.A. Compur	used	43.50
120mm Angulon F6.8 W.A. Compur	used	36.50
16" Steinheil, F4.5, Compound, synch.	NEW	54.00
16" Wollensak F3.6 Telephoto	used	34.00
20" Zeiss F7.5	used	18.50
24" Aero-Ektra F6	used	38.00
30" Zeiss F6.5 lens	used	36.50

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PICTURES in a MINUTE

by JOHN WOLBARST

Put the frame within the picture. Here's a sure way to improve your semi-scenics.



It's a well-known fact that even a mediocre picture looks more impressive when it has been set in a mat mount and been framed nicely. Much the same thing can be done to make your picture subjects look more important by adding a frame within the picture. It's particularly useful with what I choose to call semi-scenics—views of buildings, or monuments, or along city streets. One of the most important

things to remember when using the Polaroid Land camera is that you must pretty well fill the entire print area if you want the subject to look impressive. The frame within the picture helps you to do just that.

Frequently you want a certain subject, but for one reason or another cannot get close enough to make it fill more than a small part of the print. So you shoot it anyway, but are unhappy with the result. Fortunately, with the Polaroid camera you soon see how well or badly you've done and can rework the shot to improve it.

A good example is the lovely minaret I snapped last year on the Greek island of Rhodes. Although the printed pictures are of different sizes, that's only because the engravings were made that way. In the originals, the minaret is the same size in both prints. But in the first one it was nothing much.



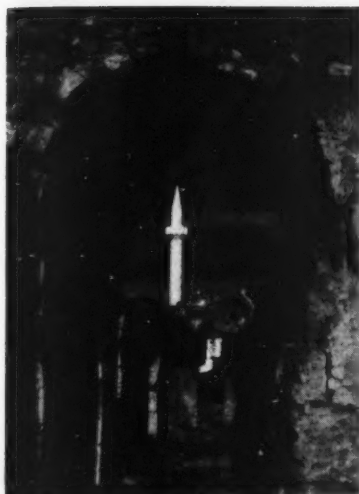
This minaret didn't look very impressive so I looked for a frame.

Actually, in the vertical picture all that's happened is that I found a fine frame for the central subject, which now assumes an entirely new importance. This principle works equally well in Topeka, Kansas.

The sea horse fountain, also in Rhodes, illustrates a different type of frame. Here it's really the main part of the picture. The problem was to find something suitable for it to frame. The fountain is made up of three sea horses (one's hidden deliberately here) and I looked through it from every possible angle until I settled on this direction. Perhaps you have an interesting gate or archway in your home town which can be used the same way. Be sure that the material you choose to frame doesn't dominate the picture.

KODAK MOTOMATIC 35 CAMERA





In some nearby bombed-out houses was this arch, the perfect frame.



Differences in tone or "color" separate a frame from the background.



Side- or back-lighting adds contrast, pops up the visual interest.

If it does, then your frame will lose importance.

A frame need not have four sides, nor be symmetrical, nor be all of the same type and "color." No matter how I aimed at the tower of the Old Palace in Florence, Italy, I couldn't get around the fact that the top left half of the picture was empty and dull. So, I waited for some clouds to come by and

complete the top half of the frame for me. Sometimes you can get a cloud to make the entire frame for a dark object, but this is an unusual situation. If you're after clouds for frames, be sure to use an orange filter to make them stand out against the blue sky. And be careful to avoid overexposure.

It's usually easier to find a dark frame for a light subject than vice

versa. It's not necessary that the frame be a silhouette, but it usually looks more solid and substantial if the light does not come directly onto it. Flat lighting kills texture and form, and the more you have of both the more punch your Polaroid prints will have. A final word: Don't start out to frame everything—or you'll frame yourself into a rut.—THE END

Lets you take 10 shots in 10 seconds

Power advances film, electric eye controls exposure for you... automatically

Shoot and listen.

That gentle buzz-z-z you hear, if you listen closely, is spring power advancing the film, cocking the shutter, counting the exposure.

You can keep the Kodak Motormatic 35 Camera at your eye while you shoot action sequences. It allows you to get additional shots while mood or action is at a peak.

You can click off ten shots in ten seconds, if you wish. Wind up the power drive and you're ready for ten more.

No exposure worries. While you keep your eye on action, an electric eye automatically keeps exposure right. It sets the Lumenized f/2.8 lens according to the lighting. And it compensates automatically for your choice of shutter speeds, from 1/40 to 1/250.

Meter dial adjusts for film speeds up to ASA 800, so you can use fast films

such as the new improved Kodak Tri-X Pan.

When light's too dim, you see a signal in the finder. It automatically tells you to try a slower shutter speed or switch to flash.

Automatic flash control. No mental arithmetic involved in shooting flash. A new flash control sets the lens opening automatically for correct exposure as you focus, in the 5- to 25-foot range.

The Kodak Motormatic 35 Camera also provides the full manual exposure control you need to shoot under contrasty side or back light conditions, to under- or overexpose deliberately for special effects.

Focusing is fast—by footage scale or with click stops for basic zones. A signal in the finder tells if you're set for close-ups, groups, scenes. You can focus without lowering the camera from your eye.

First chance you get, put this new Kodak Motormatic 35 Camera through its paces at your dealer's. See for yourself how everything on it is designed to help you shoot swiftly, expertly.

Costs less than \$110. About \$12 down closes the deal at most dealers'.

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★ **PICTURE IT NOW—**
See it again and again



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EASTMAN KODAK COMPANY, Rochester 4, N.Y.

TECHNIQUES TOMORROW

by BENNETT SHERMAN

The diffraction limit: the maximum possible resolving power of a lens and how engineers are attaining it.



Within the last two or three months several important meetings of scientists and engineers in the optical and camera field have been held. Among the new ideas which were discussed at these meetings are two which particularly concern the photographer. The first of these is the advancement of lens

design toward the natural performance limit of resolving power or sharpness: the diffraction limit.

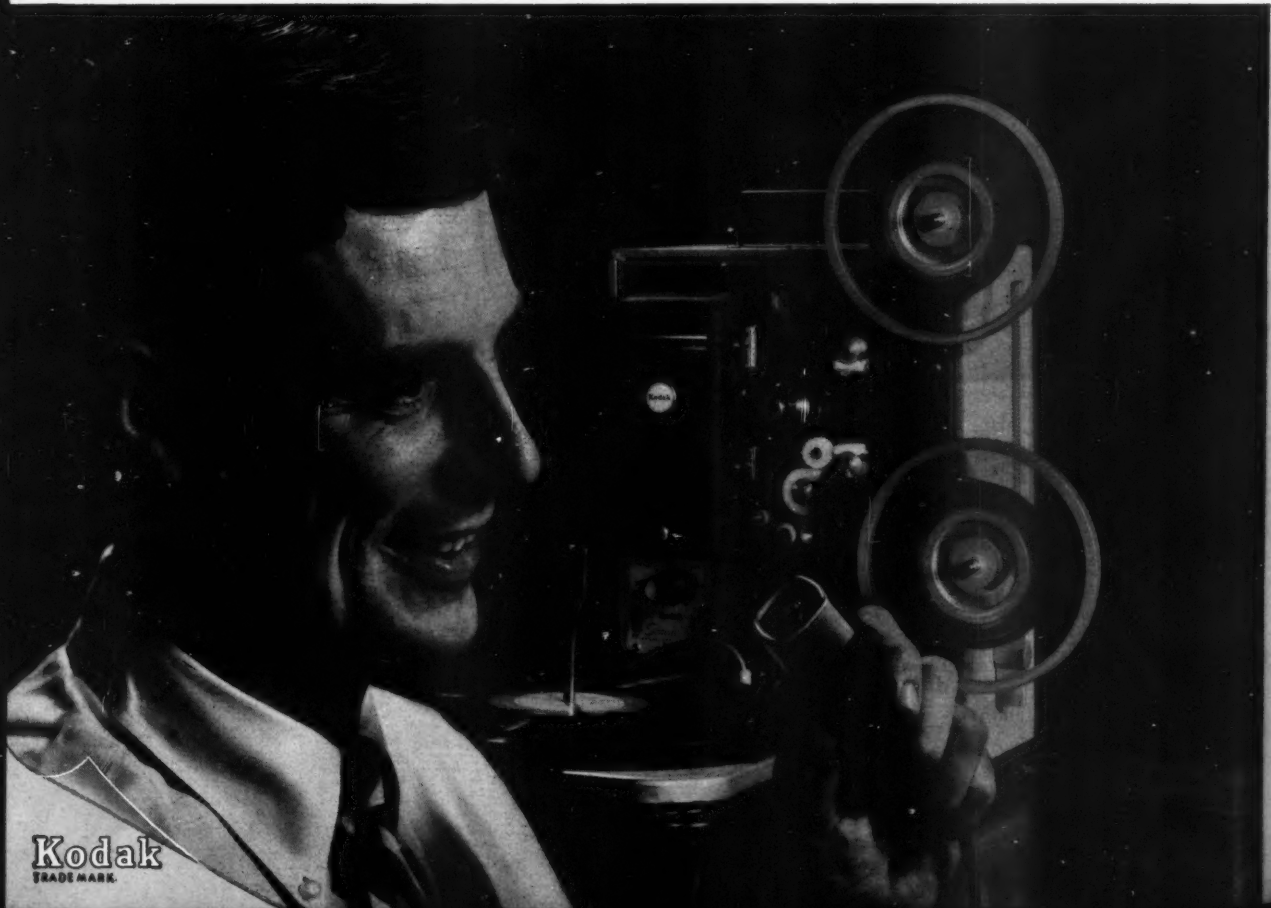
We know that light is not really a series of "rays" which go from the object through the lens and reach the film to form the image. In today's scientific language, light is electromagnetic radiation with wave-motion properties. That is, its action is similar to the familiar water waves which emanate from a source such as a stone thrown into the water. If a wall or barrier were situated near the splash, and there were a gap in the barrier to permit a part of the waves to go through, then part of the effect of diffraction could be seen. The waves passing through the opening do not just proceed ahead as pieces of the original waves, but instead there would

be a spreading out and reshaping of the waves on the other side of the gap. Well, light shows this same type of spreading out and reshaping.

The light waves which pass through an aperture, as in a lens, tend to diffuse and, more important, interfere with one another. This means that perfectly sharp images can never be formed as long as the lens has an opening of finite size. (Only with an infinitely small opening—a true point—would there be no diffraction.) It turns out that the resulting blurred image of a point object has very definite shape, which depends upon the size of the opening and the wavelength (same as the distance between the crests of the water waves) of the light. It is hard to imagine the smallness of the wavelengths of visible colors, but, for example, blue light waves have a length of about $1/60,000$ in.; yellow about $1/45,000$ in.; and red only $1/40,000$ in. It is these and other wavelengths that determine the minimum unavoidable blurring of any optically produced image.

Down from the sky

Up until recently, only astronomical telescope lenses (and mirrors) have been designed and manufactured so that the images are as close to perfection as the diffraction of light would allow. Such designs were easier with



Kodak
TRADE MARK

these lenses because, unlike camera lenses, they need cover only a narrow angle of view. At a recent meeting of the Optical Society of America, the leading association of optical scientists and engineers in the world, methods were described for designing camera lenses with a similar performance. Two new lenses were described by the

IN NEXT MONTH'S MODERN

**A noted biologist compares
the camera and the eye.**

engineers and scientists of the Perkin-Elmer Corp. of Norwalk, Conn., the firm which constructed the powerful cameras used for tracking artificial satellites. These lenses were specifically designed to perform to the diffraction limit for almost all of the visible colors. One design uses a concave mirror and a series of correcting lenses, similar to the design of the tracking camera. The second lens is based upon an old but excellent design called the Petzval lens.

Dr. Seymour Rosin of the J. W. Fecker Co. of Pittsburgh, Pa., the famous astronomical telescope builders, described a remarkably simple design,

also using a concave mirror and only two lenses, which reaches the diffraction limit in performance. Dr. Rosin suggested the design for a mirror diameter of almost 7 ft. and a focal length of some 68 ft. He noted that the field of view could be as large as two degrees, a tremendous size for the dimensions noted.

Parallel to these developments described at the Optical Society of America meeting was a series of discussions of the processes of lens design, including diffraction of light in the study of aberrations, with use of the large electronic computers now available.

It seems to me that it won't be too long before 35mm camera fans will see greater and greater improvements in lens resolution and sharpness, as well as greater color correction. Camera performance of 100 to 150 lines per millimeter on fast, fine-grain film may be the usual thing in the not too distant future.

The second new development is in the field of "fiber" optics. There are remarkable possibilities for the use of very small glass fibers which can pipe light with very little loss around corners and over considerable distances. If you can recall the plastic-rod flashlight illuminators that dentists have been using, you can get an idea of what the optical fiber or rod does. I will discuss this in a coming column.—THE END

SALON Calendar

***20TH INT. FOCUS SALON OF AMSTERDAM, Amsterdam, Holland**

Closes: January 10

Exhibit: March 11-26

Fee: \$1 for four slides or prints

Entry Forms: International Focus Salon, Koningin Wilhelminalaan 16, Haarlem, Holland

48TH EXHIBITION OF PHOTOGRAPHY, Southampton, England

Closes: January 31

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MOVIE VIEWER

WILLIAM JOHNSON

(Note: This column was to have started with a series of general movie topics, which will be the subject of "Movie Viewer" as much as individual reviews. Two fine movies intervened.)

Two powerful dramas: Ingmar Bergman's latest movie, and "The Angry Silence" from England.



When MODERN published its article on Ingmar Bergman last year (April 1960), the latest of his films to have reached the U.S. was *The Magician*. Since then five of his earlier films have arrived—

Illicit Interlude, *A Lesson in Love*, *The Naked Night*, *Dreams* and *Brink of Life*—and most of these

showed Bergman in a comparatively mellow frame of mind. Only *The Naked Night*, a study in humiliation, recalled the darkness and suppressed violence of *The Magician*. Now we have *The Magician's* successor, *The Virgin Spring*, which brings that violence into the light.

The Virgin Spring tells a simple story, far simpler than any of Bergman's recent films (it's based on a 14th Century Swedish legend). A young girl, riding off to church, meets three goatherd brothers in the woods. While the youngest, only a boy, looks on in horror, the other two attack her; one of them rapes and then kills her; the two then strip off her fine clothes. The brothers move on and ask for shelter at the house of the girl's parents, not knowing who they are, and then try to sell them the girl's clothes. The father kills not only the two guilty brothers but also the innocent boy. Stricken by remorse, he vows to build a church on the spot where his daughter was killed; and when he takes up

her body, a spring gushes miraculously from the ground.

Bergman's treatment of this story largely preserves its forthright simplicity, so that at first sight it may be taken for little more than a primitive morality tale portrayed with startling realism. But those who are attracted to the film by its sensational elements will go away with more than they bargained for.

Let's deal with these sensational elements first. It has long been a practice of Bergman's to insert into his films brief scenes of brutality or repulsiveness, which serve to rivet the film as a whole into the spectator's memory. For example, in *Three Strange Loves*, we saw a live snake dropped on an antheap; in *The Naked Night*, a man is sadistically beaten up and dust kicked into his face every time he collapses; in *The Seventh Seal* there is a moldering skull and a face-slashing; and in *The Magician* there is the lurid attempt to frighten the doctor. Whereas all these examples depend for their impact largely upon their unexpectedness or upon the use of close-ups and unusual lighting, the brutality of the rape and murder scene in *The Virgin Spring* is built up slowly and clearly, and most of it is photographed from a detached and static viewpoint.

It is this detachment, this near-absence of melodrama, coupled with Bergman's masterly sense of timing

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and his ability to elicit superb performances from his cast, that arouses the cold shock of this sequence. By cold, I mean that we are not excited by artificial means only to feel afterwards that we have been tricked; on the contrary, the impact increases in one's memory. Paradoxically, the weakest scenes in this sequence are some of the close-ups; and one of the most powerful scenes is a long shot of the two brothers roughly dragging the clothes off the girl's corpse.

After this ruthless encounter between innocence and evil, in which the lovely and mettlesome girl is reduced systematically to a used, butchered and plundered thing, it seems impossible that the revenge sequence could be anything but an anticlimax. Bergman achieves the impossible, first by switching to a slower rhythm and postponing the actual moment of revenge until the suspense has become almost painful, and secondly, when the moment does come, by touching off an explosive series of close-ups and panning shots that just escape melodrama. From then on he maintains a rapid rhythm up to the vow and the miracle which end the film.

This attempt to deal with the problem of evil invites comparison with Bergman's earlier venture into the middle ages, *The Seventh Seal*, which dealt in part with the same problem. Since the same actor—Max von Sydow

—plays both the knight in *The Seventh Seal* and the father in *The Virgin Spring*, the contrast between these two roles is clear to see. Both are men of authority and responsibility, but whereas the knight is idealistic and invulnerable, the father is realistic and all too vulnerable. Though superficially less sympathetic than the knight, the father is more human and more convincing.

A similar contrast can be found between the two films as a whole. On the face of it, *The Seventh Seal* is more



The encounter of good and evil: the gay girl and the grim goatherds.

complex, *The Virgin Spring* simple to the point of naivety. The truth is that *The Virgin Spring* seems simple because, except for one or two episodic sequences, it is so concentrated and

well controlled; both its content and its technique show a striking complexity. One example is the character of the girl. To strengthen the impact of the rape and murder scene, one would expect Bergman to portray the girl as all sweetness and goodness. Instead, Bergman makes her human, introducing her to us as a rather spoiled and vain young creature before allowing us to see her attractive qualities. Another example is the sequence in which the father fells a birch sapling to get twigs for a ritual sauna bath before taking his revenge. The long shot of him pushing at the lone sapling goes beyond the obvious symbolism (the echo of his daughter being felled, the foreshadowing of the boy being felled) and attains a strange, ironic and moving beauty.

Some idea of the unobtrusive complexity of the technique has been given above, in describing the two violent sequences. It can also be found in the lighting, where Bergman avoids the temptation of dramatic low-key effects. Even for the interior scenes, and notably the revenge sequence, Bergman uses a greater clarity and a fuller range of tones than for the interiors of *The Seventh Seal* and *The Magician*.

The Virgin Spring is rich in significant details which sustain both its power and its human complexity. The fact that the goatherd-rapist is a mute (Continued on page 30)

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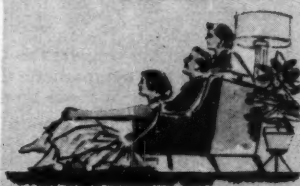
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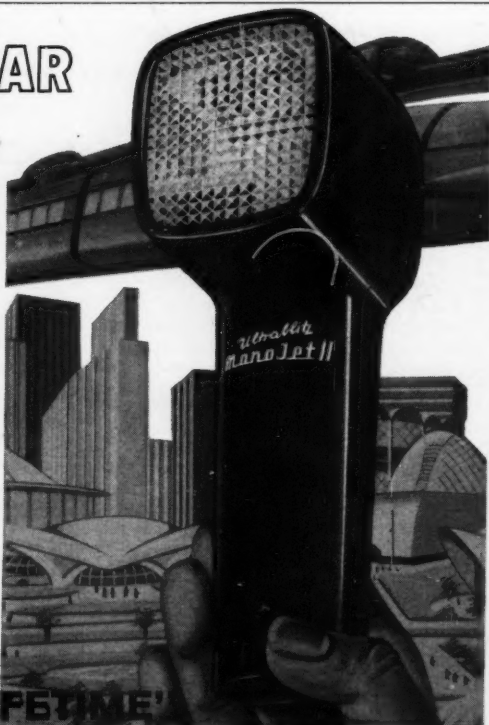
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MOVIE VIEWER

(Continued from page 29)

who expresses himself in grunts makes him more real and more horrifying. When the goatherds join the father's household at dinner, the variety of eating habits around the table tells its own story. There is one close-up in which Max von Sydow, merely by parting his lips, reveals exactly what the father is feeling.

The subtleties of *The Virgin Spring* begin to appear some time after one has seen it and absorbed its initial onslaught. That this should happen, even without a second viewing, is a strong tribute to the integrity of both the theme and its treatment.

Conflict in a modern setting

Another, completely different movie of power and integrity has arrived from England. While the recent crop of good English serious films—*Room at the Top*, *Look Back in Anger* and *The Entertainer*—were derived from successful novels or plays, *The Angry Silence* was written directly for the screen, and surpasses all of them. (It also emphasizes how far *I'm All Right, Jack*, which attempted and largely failed to make comedy out of a similar situation, has been overrated.)

This is the story of Tom Curtis, a factory worker who refuses to join an unofficial strike that, unknown to the workers, is engineered by a behind-the-scenes agitator. The situation develops in intensity and bitterness: the worker refuses to be intimidated and is "sent to Coventry"—his workmates will not speak to him. Newspaper reporters and TV commentators fan the flames. The worker's family and his best friend are embroiled. Finally, inevitably, the situation explodes in violence.

The script-writer, Bryan Forbes (who also co-produced the film), has avoided any easy division into right and wrong. We are led to understand the attitude of most of the other workers, and of the boss who wants to end the trouble by firing Curtis, as well as the fateful stubbornness into which Curtis himself is driven. The characters and the dialogue are conceived with forceful realism; the domestic scenes, so often the weak spot in otherwise realistic movies, are thoroughly convincing, sentimentality never being mistaken for tenderness. The story unfolds with an incisiveness in which every scene moves the action forward, and in which I detected not a single false note to destroy the atmosphere, so that the movie becomes as gripping as any thriller.

Guy Green, the director, entered the movies after World War II as a scenery shifter, rose swiftly to head cameraman, won an Academy Award for his work on *Great Expectations*, and took to directing in 1954. He does not attempt to be stylish. The camera work is less polished than in, say, *Room at the Top*, but the occasional rough-

(Continued on page 44)

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2-4X (approx. 4x5) (from 35mm & 828)	100
---	-----

Printed on Ansco Printon:

5x7 95¢ each	8x10 1.85 each
3 for 2.75	2 for 3.50

COLOR PROCESSING OF KODACHROME

*35mm x 20 exp. w/mounting	1.00
*35mm x 36 exp. w/mounting	1.75
35mm x 15 exp. Stereo w/mounting	1.75
35mm x 28 exp. Stereo w/mounting	2.75

MOVIE FILMS

8mm Roll	1.00
8mm Mag.	.75
16mm Mag. 50'	1.00
16mm x 100' Roll	2.50
8mm x 100' (Bolex)	3.95

* 35mm Anscochrome, Super Anscochrome, Ektachrome: Same prices as shown.

120, 620, 127 Anscochrome, Super Anscochrome, Ektachrome 1.00

A REAL TIME SAVER!

"1-TRIP COLOR OFFER"

35mm EASTMAN KODAK NEGATIVE COLOR FILM

WITH PROCESSING INCLUDED
AND
JUMBO COLOR PRINTS (Type C)

12 exposure roll

3⁵⁰ ea. • 3 for 9⁷⁵

20 exposure roll

4⁵⁰ ea. • 3 for 12⁷⁵

* Prices include film, processing of film, and 1-jumbo color print of each exposure

It's the newest COLOR FILM 8mm Ansco MOVIECHROME



HIGH SPEED • FINE GRAIN
COLOR DAYLIGHT • ASA 20

PROCESSING INCLUDED

8mm Roll	Now available for 8mm Magazine Camera Owners!
25 ft. Dbl.	
3-rolls 8.95	3-mags 12.00
10-rolls 28.00	10-mags 38.00

IT'S NEW! HIGH SPEED!

35mm Kodak Ektachrome

PROCESSING INCLUDED

Daylight ASA 160 or
Type B ASA 125

3-ROLLS	10-ROLLS
20 exp. 36 exp.	20 exp. 36 exp.
875 1425	2750 4250

DUPLICATE Color Slides 35mm Mounted From Transparencies

*Your duplicates are actually made on Kodachrome film!

20¢ each	10 for 1.50
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*And that's why only Lord can give you faithful reproduction of your treasured slides.

It's New HIGH SPEED! 35mm Ektachrome

Bulk Film

PROCESSING INCLUDED

28 ft.	21.95
50 ft.	37.00
100 ft.	70.00

Specify Daylight or Type B
FREE! Mailing bags and empty cartridges. Specify preference for 20 or 36 exposures.

BLACK and WHITE

Send for FREE mailing bags and price list

PANCHROMATIC ROLL FILM

120, 620, 127

ASA

Day.-Tung.

80 64

10 rolls 2⁹⁵

CUSTOM DEVELOPING & PRINTING

Ultra fine grain finishing and professional print quality.

JUMBO PRINTS

8 exp. rolls	75¢
12 exp. rolls	1.00
20 exp. 35mm	1.50
36 exp. 35mm	2.50



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Famous
35mm

Slide Viewer

- Unique Panoramic Lens
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List 10.95

only 5⁹⁵ Ppd.

BIG SAVINGS! Developing of KODACOLOR WITH COLOR PRINTS

8 exp. roll	2.00
12 exp. roll	2.75
20 exp. roll	3.70
Developing any size roll	70¢

COLOR PRINTS from KODACOLOR

Made from Kodacolor neg. only

127, 120, 620, 828, 35mm } 10 for 1⁹⁵

5X (5 x 5 or 5 x 7)	each 1.00	3 for 2.85
8X (8 x 8 or 8 x 10)	each 2.75	2 for 4.95

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**ALSO EKTACHROME and
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16mm 50 ft. Magazine (with mag.).....	1.00
16mm 100 ft. roll.....	2.75
(Ansochrome and Black & White prices on request)	

KODACHROME • EKTACHROME & ANSCOCHROME 35mm

ANY: 20 exp. slide mtd.	\$100
36 exp. slide mtd.	1.75
15 pair stereo mtd.	1.75
28 pair stereo mtd.	2.50
828 slide mtd.80

KODACOLOR SNAP SHOT FILM

127-120-820	
7-8 exp. dev. & print.....	\$2.39
11-12 exp. dev. & print.....	3.19
35mm-19-20 exp.	
Dev. & 2x (2 1/4 x 3 4/4) prints.....	3.75
Dev. & 3x (3 1/2 x 5) prints.....	4.75

Enclose Cash, Check or M.O. in Film Container...
Do Not Send Separately! (No stamps or C.O.D.'s.)
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Plan "C" FACTORY PACKED

Color Film with Solar Processing Included!

You can now buy your favorite brand and size of color film in original factory packages, fresh dated and with SOLAR processing included at lowest prices! (may be assorted)

KODACHROME processing included	any 3-5	any 6-9	any 10 or More
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8mm Magazine	4.15 ea.	4.05 ea.	3.95 ea.
16mm Magazine	6.50 ea.	6.40 ea.	6.25 ea.
16mm 100 ft. roll	9.25 ea.	9.15 ea.	8.99 ea.
35mm 20 exp. mtd.	2.70 ea.	2.60 ea.	2.50 ea.
35mm 36 exp. mtd.	4.10 ea.	4.00 ea.	3.90 ea.

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No gimmicks... no extras... no hidden charges... we do NOT handle repackaged, reperfected, "so-called" factory-fresh, short length, out-dated or otherwise sub-standard film... PRICES INCLUDE ALL SHIPPING CHARGES AND RETURN OF PROCESSED FILM ANYWHERE IN THE U.S.A.!

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CINE PRODUCTS, Inc. Chicago 32, Ill.
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modern COLOR

by NORMAN ROTHSCILD

Now you can make low-cost, high quality color slide dupes with new Ansochrome Duplicating Film.



The difficulties of producing sharp, well-rendered copies of color slides have long plagued both the amateur and professional photographer. Time, expense, and complicated

processing were necessary to create high quality dupes—and even then, the color rendering was often far from satisfactory. Lately, however, these problems have begun to yield to such research as produced the simplified, compact Heiland Repronar duplicator, which I discussed in December, and the new Ansochrome Duplicating Film Type 544, which we'll concentrate on this time.

Ansochrome Duplicating Film Type 544 is available only in 100-foot bulk rolls at \$13.50 each. (Note: Don't confuse this new film with Ansco Color Duplicating Film Type 538, which requires special chemicals and processing not available generally.) For hints on loading your own cartridges from bulk film see "Modern Color," October 1960. In all probability your dealer doesn't regularly stock this film but can order it from Ansco for you. The low cost should encourage you to do extensive experimentation in duping, such as cropping, montages and creative and corrective work with filters.

This film, which is specially designed to make high quality color slide duplicates, requires no masking or other complicated procedures. An ordinary enlarger lamp, such as a No. 212, can be used as the light source. Processing is the same as for regular and Super Ansochrome films. The dupes I produced from Ansochrome and Super Ansochrome transparencies came very close to the originals in appearance. Copies of transparencies made on other color films were also quite good in color rendition.

The gradation of Ansochrome Duplicating Type 544 is softer than that of picture-taking films. This soft gradation is specially suited to cope with the inherently high contrast of color transparencies. Though high con-

trast is needed to produce good transparencies, it becomes a drawback when you duplicate or print your slides, because the contrast increases with each duplication.

In addition to low contrast, the new film has an exceedingly fine grain structure, which helps preserve the sharp details in your original.

Since an ordinary enlarger lamp is all that's necessary, you have considerable latitude in the kind of copying setup you can use. I've field-tested several with Type 544. First, I used the lamphouse of an enlarger as the light source. I taped a 2 x 2 slide to a 35mm negative carrier, removed the lensboard from the enlarger, and then placed a single-lens reflex with lens and extension on the easel with the lens pointing toward the slide. In order to make the camera's film transport lever accessible, I placed the camera on its back atop a box about 2 in. high.

(You can also use a variation of this method, in which the lens of the enlarger is utilized—the image from this being projected directly onto the mirror in the camera. This method requires that you work in a completely darkened room, and there is always danger from stray light. However, if your enlarger doesn't have a removable lensboard, this method may be mandatory, since you may find it difficult if not impossible to aim your camera through the small opening left by the enlarging lens and still get full image coverage.)

Placing the filter

In the color head of the enlarger I placed a piece of Ansco Heat Absorbing Glass and a UV-16P filter. If you don't have a color head in your enlarger you can place the heat absorbing glass and UV-16P filter between, above or below the condensers, whichever is most convenient with your machine. If you must place filters below the lens, don't use either heat absorbing glass or the UV-16P there, since they affect definition. Instead substitute a Wratten 2B gelatin filter for the UV-16P, and a CC30G for the heat absorbing glass.

Now for exposure with this setup. With the camera lens set at f/16 and with a 212 enlarger lamp, my exposure ran 1 sec. when making a 1:1 copy. I give this figure only as a guide for you. Since the various enlargers on the market differ considerably in (Continued on page 46)

A touch of Magic

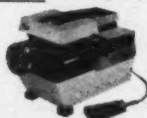


Rollei magic

THE FULLY AUTOMATIC ROLLEI

While designed essentially for beginners or others who refuse to become involved with camera mathematics, don't let the *utter simplicity* of Rollei magic mislead you. Thousands of pictures already taken have proved that it provides "on the button" exposures every shot, in or out of doors. All you need do is focus, and press the shutter release. Both lens and shutter are automatically and instantly set for the ideal exposure—whether in deep shadows or brilliant sunlight. Further, you can instantly compensate for back lighting—and a unique method of filter mounting automatically compensates for the filter factor. Flash pictures, of course; as well as time exposures of any length. And you get either 12 pix $2\frac{1}{4}" \times 2\frac{1}{4}"$, or 16 pix of Super Slide size (with adaptor). See it at Rollei franchised dealers to-day, or write for literature.

AVAILABLE SOON!
Rollei automatic
universal slide projection



Worth waiting for. Rollei universal projector takes $2\frac{1}{4}" \times 2\frac{1}{4}" - 1\frac{1}{2}" \times 1\frac{1}{2}"$ and 35mm slides in original mounts. Many exclusive features.

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NEW products

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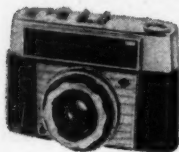


Voigtlander's
Dynamatic II 35
rangefinder camera with Prontor-
matic V shutter
has automatic, as
well as manual,
exposure control.
The 50mm f/2.8
Lanthar lens fo-
cuses down to 3 1/4

ft. but also has three zone-focus settings. After the film speed is set (E.I. 10 to 400), you select a shutter speed from 1/30 to 1/500 sec. The camera sets the lens aperture, which appears in the viewfinder and in a window on top of the camera. High- or low-light warning signals also appear in both places when necessary. The exposure meter consists of three cells equally spaced around the circumference of the lens. When a filter is used, the proper exposure is automatically set, without the photographer using filter factors, since the filter covers the meter cells as well as the lens. The shutter also has a B setting and MXF sync. Dynamatic II has a 1:1 frameline finder, rapid film advance, and a subtractive film counter. Price of the Voigtlander Dynamatic II is \$139.50; case, \$9.75. Write:

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f/22. The Compur-
Special automatic
shutter covers the

range from LV 8 to 18. The exposure meter accommodates films from E.I. 10 to 250. In minimum lighting conditions the shutter adjusts itself to f/2.8 at 1/30 sec. As the light level increases, shutter speed increases to 1/500 at f/8 and remains at 1/500 all the way to f/22. The IIIS can be operated manually and with flash (X sync) at 1/30 sec. Other features include: low-light warning signal in the viewfinder; frameline finder with automatic parallax compensation; rapid film advance lever. The Optima IIIS sells for \$124.50. Write:

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viewing and full
ground-glass fo-
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8 Zoom S 8mm
movie camera.
The f/1.8 lens
zooms from 11.5
to 33mm and the va-
riable shutter pro-

vides speeds up to 1/800 sec. A semi-automatic exposure system for films
(Continued on page 38)

Photo by
G. K. Livitsanos, NYI

Anita Ekberg

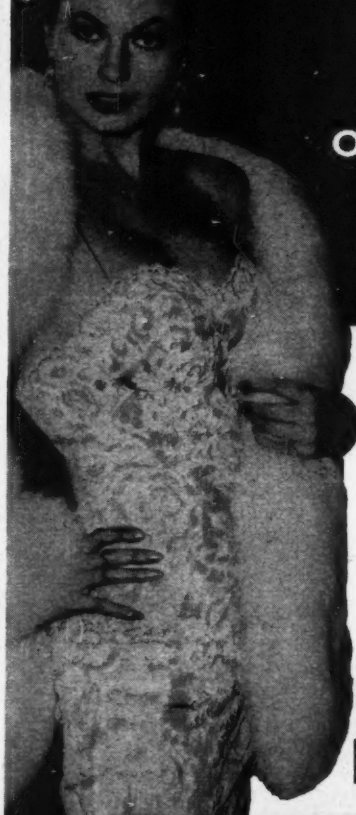


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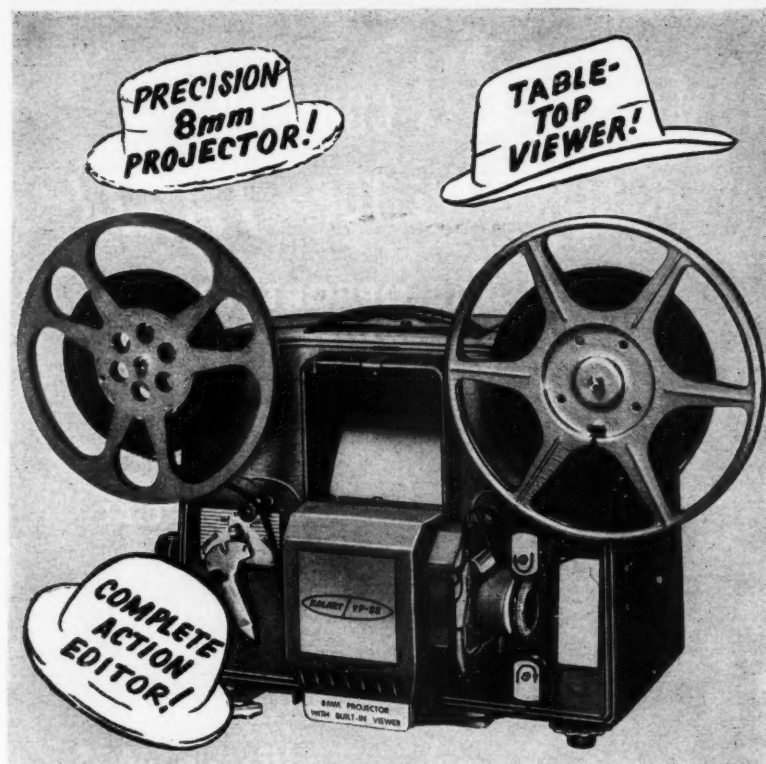
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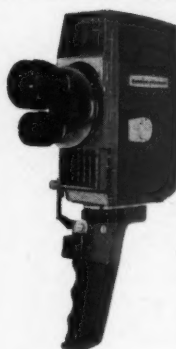
NEW PRODUCTS

(Continued from page 36)

from E.I. 10 to 80, operated by matching two needles, can be adjusted while shooting. The camera operates at 8, 12, 16, 24, 32 and 48 fps, as well as single-frame. Other features include: fade-in and fade-out; backwind; drop-in loading; pistol grip; and beamsplitter in front of the diaphragm. The Arco 8 Zoom S costs \$189.50. Write:

ARCO PHOTO
FERRY BLDG., SAN FRANCISCO, CALIF.

Electric Eye Sankyo 8



Three f/1.8 lenses are featured on the fully automatic Sankyo Moviemat 8mm turret movie camera. In operation you set the film speed on the exposure meter (range E.I. 10 to 40), aim and shoot. The viewfinder is coupled to the lens turret for all three lenses and includes a signal for insufficient light. Other features are: 8-ft. film run on one winding; drop-in loading;

single-frame exposure; auto footage counter, and accessory pistol grip. The Sankyo Moviemat 8mm Electric Eye camera sells for \$89.50; pistol grip, \$10.

Write:
CAMERA SPECIALTY CO., INC.
705 BRONX RIVER RD., BRONXVILLE, N. Y.

8mm Remote Control Projector



Roto-Remote, an illuminated electronic cube, permits the operator of the Dual/Lectric 8mm movie projector to stop, start, or reverse the film. The device has no knobs or external switches but works on mercury switches which are activated when Roto-Remote is held in different positions. A pilot light in the cube illuminates the legend for each position during filming. Dual/Lectric also has a single-knob control on the projector. Standard lens is a 23mm f/1.2 Lumina, but a 15 to 25mm f/1.2 Filmovara zoom lens is also available. After you insert the film, a device automatically threads the film, turns off room lamp, turns on projection lamp, winds film on take-up reel, and starts projector. Other features are: variable speeds from 16 to 24 fps; micrometer framer; two-position 150-watt (T14 Tru-Flector) lamp; film loop restoring button; built-in splicer; retractable 6-ft. power and 10-ft. remote cords which can be latched at any length; and two motors, for all-gear drive and cooling. Price of the Bell & Howell Dual/Lectric: Model 465A (standard lens), \$239.95; Model 465AY (zoom lens), \$264.95. Write:
BELL & HOWELL
7100 MCCORMICK RD., CHICAGO 45, ILL.

Small Movie Floodlamp

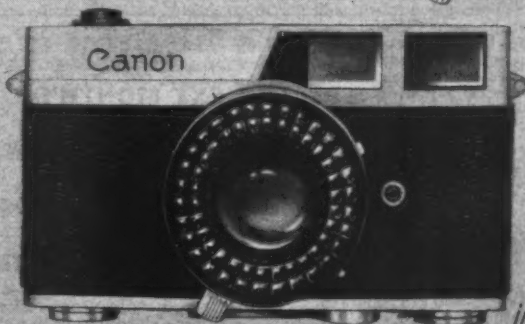
General Electric's DAN reflector floodlamp has a diameter of 2½ in. and is just under 4 in. long. The 200-watt lamp has a life expectancy of four hours, a mean color temperature of (Continued on page 40)

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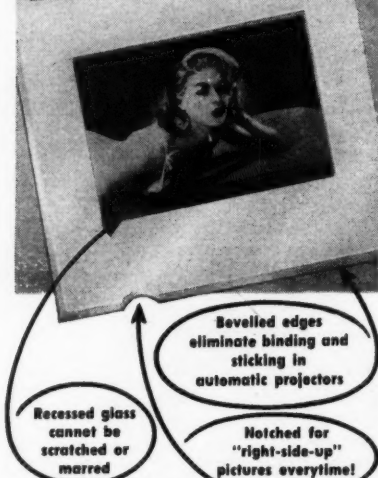
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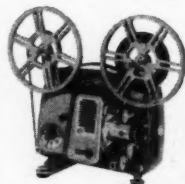
NEW PRODUCTS

(Continued from page 38)

3400K, and operates on 115-120 volts. The manufacturer expects the bulb to be used with two-lamp holders or four-lamp bars (about 12 in. long, weighing about 1½ lbs.). Guide numbers of 22, with two DANs, and 32, with four DANs, for film with E.I. 16 are recommended by General Electric. DAN floodlamps sell for \$1.35. Write:

GENERAL ELECTRIC
 NELA PARK, CLEVELAND 12, OHIO

Two-Speed 8mm Projector



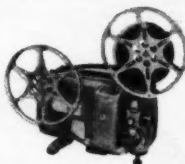
By turning a switch on the Bolex 18-5 8mm movie projector you can change projection speed from 18 to 5 fps, thereby projecting some scenes almost four times longer than normal. The manufacturer claims the double claw mechanism will not damage the film while the speed is being changed and that there is no flicker at the slower speed. The camera's variable shutter changes from three to nine blades as projection speed drops to 5 fps. The 18-5 has a 50-watt, 8-volt lamp which can be centered by the user; forward-reverse movement; 400-ft. capacity; and comes with a choice of f/1.3 lenses in focal lengths of 15, 20 or 25mm. A room lamp can be attached to the projector to go off when the projector is running. Price of the Bolex 18-5 projector is \$149.50. Write:

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 100 SIXTH AVE., NEW YORK 13, N. Y.

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Another big batch of new equipment tests.

8mm Zoom Projector

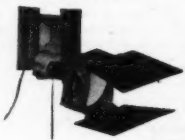


The Sekonic 8mm Zoom movie projector measures 7½ x 11 in. and weighs a little over 9 lbs. Its f/1.6 Resonar lens zooms from 15 to 25mm and stays in focus as it zooms the picture. The

projector uses a 50-watt lamp and operates on 110- to 220-volt AC. Also featured are: 400-ft. reel capacity; variable speed control; room light outlet; forward, reverse and still operation; and provision for attaching splicer, editor and anamorphic lens. Price of the Sekonic 8mm Zoom Projector is \$109.95. Write:

SEKONIC, INC.
 130 WEST 42ND ST., NEW YORK 36, N. Y.

Folding Barndoor



Lowel-Light introduces an aluminum barndoor which folds flat for carrying and weighs less than 5 oz. Extra large door flaps, 5 x 10 in., are removable and replaceable. Flaps swing back 270°. The barndoor works with portable clamp-on lights

using R 40 type reflector bulbs (150 to 500 watts) as well as with the Lowel-Light lamp. The unit fits on the front of the bulb and can be attached or removed without removing the bulb from the socket. Lowel-Light Barndoors cost \$5.75. Write:

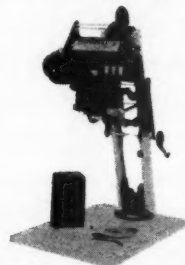
LOWEL-LIGHT PHOTO ENGINEERING
 421 WEST 54TH ST., NEW YORK 19, N. Y.

Plastic Chemical Bottles

Gallon plastic bottles, called Flexi-Bots, can be squeezed to force the air out of them, thereby preventing oxidation of photographic chemicals. Through the use of air-tight plastic caps, rust and corrosion are eliminated. The opaque white color of the bottles is said to cut down harmful action of light on the chemicals. FlexiBots are priced at \$1.50 each, or \$4 for three. Write:

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2½ and 35 Color Enlarger



Chromega B-10 enlarger, designed for 2½ x 2½ and 35mm negatives, uses a dial-controlled filter system for color print enlarging. The operator dials the desired color correction, from 0 to 120, thus eliminating the assembling and changing of filter packs. The condenser-less illumination

system consists of two 100-watt lamps in individual lamp houses. Chromega B-10 enlarger has manual focusing. By shifting the position of the filter assembly, it can be used for black-and-white printing. The new illuminating system and lamphousing are available to fit Omega B-8 and Automega B-7 enlargers. Cost of the Chromega B-10, with synchronous timer, is \$425. Write: SIMMON BROTHERS, INC.

30-28 STARR AVE., LONG ISLAND CITY 1, N. Y.

Color Reference Book

Kodak Color Dataguide, a 40-page booklet written to help the reader set his own processing and printing equipment, contains two dial computers (for filter pack and printing exposure setting), gray card, photographic gray scale, color control patches, 35mm standard negative and sample color print, set of six viewing filters, nine color reproductions, and a filter pack chart. It sells for \$4.95. Write: EASTMAN KODAK CO.
 ROCHESTER 4, N. Y.

Correction: In the December 1960 issue of MODERN, the Optika IIA single-lens reflex was unfortunately omitted from the New Camera Buying Guide. Its features are: waist-level; 10, 12 or 15 exp. on 120 roll; cut film; film pack. Four neg. sizes to 2½ x 3½, acc. interch. film mags. Lens—105mm f/3.5, preset, interch. Shutter—focal-plane, 1/20-1/400, FP,X sync. Optical sportsfinder, double ext. bellows, \$229.50.

The Heiland Pentax H-2 35mm single-lens reflex camera was listed as discontinued in 1960. We have received word from the importer that this camera is still in production.

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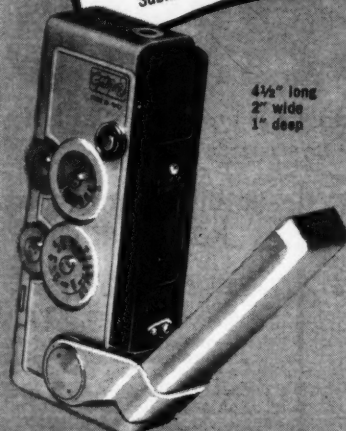
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ULTRA MINIATURE

by JOSEPH D. COOPER

How to view, judge, and store your negatives. More news from Photokina: new Minox filter sets.



You can tell a good deal about the quality of an ultraminiature negative by viewing it through a magnifier. A number of special magnifying viewers are on the market: among those specifically

for ultraminiature work are the Minox viewer, which is placed over the special plastic sleeves protecting Minox negatives, and the GaMi viewer, which is meant for use with 16mm films.

You won't have much success in viewing accurately if you hold the negative and magnifier up to a light bulb or toward the light coming in a window. I suggest that you view the negatives by placing them on illuminated opal glass. This technique has two advantages: in the first place, the light will be even, and constant. Secondly, by giving support to your hands, both negative and magnifier will be held steady, and you will be able to see fine detail in the negative. A Kodak Transparency Illuminator or an Idealite Illuminator is best by far for the purpose.

What is a good negative?

Your negative should appear sharp, have fine grain, and should show detail in both highlights and shadow areas. Actually, since both sharpness and graininess can often be affected by a single factor—overexposure—you

should always give your film the minimum exposure necessary to record shadow detail. This is, of course, desirable for another reason: to cut down the amount of exposure time required in printing.

The problem of a suitable negative wallet for 16mm films has finally been solved. The Warren Processing Laboratories, 1924 Ave. U, Brooklyn 29, N. Y., have made up a transparent plastic wallet that accommodates three negative strips of eight frames or a total of 24 frames to the wallet. Most film lengths run to either 20 or 24 frames, size 10 X 14mm. Each film channel is a thin, flattened tube, which makes it easy to insert and withdraw the film strip without scratching. For one or more wallets, send Warren 25 cents each; for ten, send \$2.00.

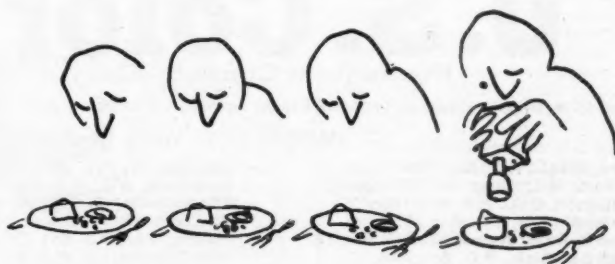
New Minox filters

At Photokina, Minox announced three sets of filters each consisting of a plastic holder and three filters, packed in a plastic box.

The color set fits both models of the Minox. It consists of an R-3 for noon hours with high sun, an R-6 for open shade on a sunlit day and a B-6 for conversion of daylight film to tungsten and for use with clear flash.

The black-and-white set for the Minox IIIS includes a UV, a neutral density filter with a filter factor of 10X and a yellow filter with the usual filter factor of 2X.

The black-and-white set for the Minox B includes a yellow filter with a factor of 2X, an orange filter with a factor of 3X and blue filter with a factor of 1.5X. The blue filter, according to Minox, is to take away that pasty look which may appear in black-and-white flash portraits.—THE END



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Moscow and the Kremlin (left) from side set of the same name, and Lavra Palace (right) from "The Crimea and the Black Sea Area"

All motion pictures listed here are in black and white.

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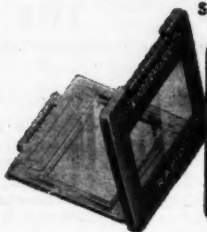
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MOVIE VIEWER

(Continued from page 30)

nesses, with their suggestion of a candid newsreel approach, reinforce the realism of the action. When Green does aim at a precise camera effect, he makes sure that it will come off. For example, there's one virtuoso camera-and-editing sequence to show the various reactions when Tom Curtis is written up in a national newspaper: a series of pans and traveling shots away from close-ups of the newspaper in various hands. But most of Green's precise effects are far less obtrusive, as when he pans from Tom Curtis approaching the picket line to a finely composed and menacing close-up of three teddy-boy workers' faces.

In this and all the other close-ups, directing, acting and photography combine to make exactly the right impact, avoiding the slight artificiality



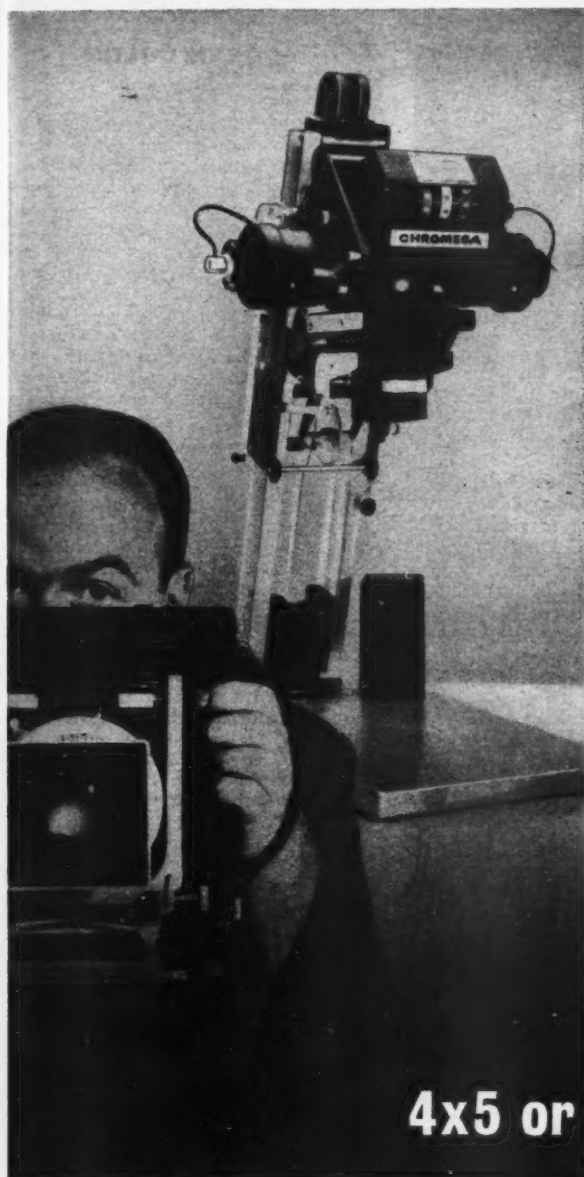
In *The Angry Silence*, Tom Curtis struggles through the picket line...



... and the teddy-boy workers look for some trouble to make on Sunday.

and break in tone that is so often perceptible when close-ups are intercut into sequences charged with action or emotion. *The Angry Silence* succeeds even in such tricky close-ups as those in which Curtis, sitting ostracized in the factory canteen, is shown becoming more and more infuriated by his workmates' carefree jollity, until he yells at them to shut up. I was also impressed by the close-ups of the teddy-boy leader's face, a subtle study in deadpan viciousness.

Richard Attenborough, the other co-producer, plays the part of Tom Curtis with an effortless-seeming honesty that shows just how wilfully his talent was wasted in *I'm All Right, Jack*. After such a superb first production from him and Bryan Forbes, I can hardly wait for their next.—THE END



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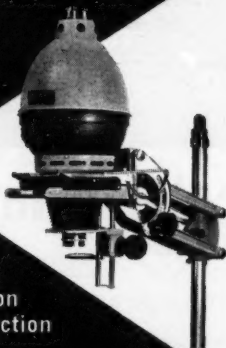
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MODERN COLOR

(Continued from page 34)

light output, I suggest you make a series of exposures, some longer and some shorter than the basic exposures given by me. Since Anscochrome Duplicating Film Type 544 costs only 13 1/2 cents per foot, I'm sure you won't mind the expense of a few test exposures. Some condenser enlargers give rather contrasty results. This is generally troublesome when duplicating. Where extra contrast is objectionable, try placing an opal glass below the condenser. Exposure will then have to be increased about eight times.

Another setup I made utilized a camera with an Accura Slide Duplicator Model VI mounted on it. This device lets you make 1:1 or same size duplicates from 35mm slides with rangefinder and leaf-shutter reflex cameras that cannot make use of extension tubes or bellows. It fits the lens via a Series VI filter adapter ring. (For descriptive material on the Accura VI Duplicator write Photographic Importing and Distributing Corp., 67 Forest Rd., Valley Stream, N. Y.) To the front of this I taped the heat absorbing glass and the UV-16P filter. I mounted this entire assembly on a tripod. At a distance of 18 in. from the slide I placed a 212 enlarger lamp in a 6-in. matte finish aluminum reflector. This was mounted on a light stand for convenience in placement. With this setup I found that exposures ran about 1 sec. at f/22 or 1/2 sec. at f/16 for a transparency of average density.

Beware of overheating

You can also construct a light box to hold a 212 enlarger lamp and place an opal glass atop it. This method is workable, provided the box is large and well ventilated, since a 212 enlarger lamp gives off a considerable amount of heat. You can dissipate a lot of this heat by installing a blower. (A hair dryer with the heating element removed makes a good blower.) Cut an opening in one side of the box and a vent in the other side, so placed that the blower can be mounted outside the box with the blast of air directed through the opening, onto the lamp and out of the vent. With a lightbox setup such as this, and the lamp 4 in. from the slide, exposure runs 2 seconds with the lens set at f/11 for a 1:1 copy with extension bellows.

You can make still another setup with four 12-in. long, 1-in. diameter dowels mounted on a board. To the top of these, glue a sheet of opal glass using Duco or a similar cement. Underneath, mount a socket for a 212 enlarger lamp. The opal glass should be large enough to prevent as much stray light as possible from reaching the lens. A lens hood will also help. The special advantage of this setup is its simplicity of construction and small risk of overheating. In both the light-

(Continued on page 55)



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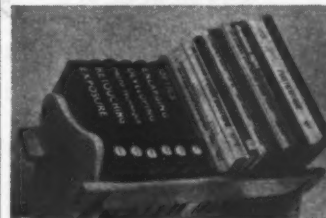
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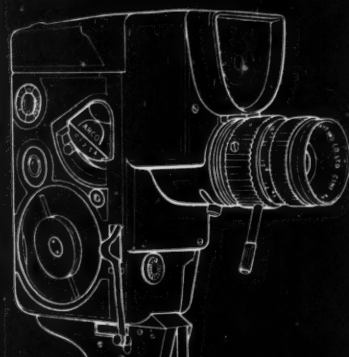
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New Photo Books

GUIDE TO CREATIVE PHOTOGRAPHY, by Harold Joseph Highland. 400 pages, profusely illustrated. Theodore Audel and Co. \$3.95*

Here's a rather splendid guide to all general aspects of photography. It can be recommended to all novices with little reservation. In covering the basics of photography, optics, lens tests, cameras, picture taking techniques, choice of film, exposure, lighting, night photography, glamour, child photography, use of the exposure meter, color, Polaroid Land cameras and techniques, plus developing and printing, Highland is explicit, readable, and relatively complete. The diagrams are very helpful, the book is well paced visually and extremely well planned.

Unfortunately, the author has limited the usefulness of the book. In dealing with films, developers, flash-bulbs and other materials, he fails to mention any specific brands or give any guideposts as to exactly what materials a photographer should choose. This is a serious omission, since it is among the conflicting claims of film speed, quality and differences in flash effectiveness that the amateur is apt to flounder. But if he drowns after reading Highland's book, at least he'll go under with a well-rounded knowledge of general photography.—H.K.

PHOTO SECESSION, photography as a fine art, by Robert Doty. 104 pages, illustrated. George Eastman House. \$7.50*

Certainly few periods of photographic history were as productive and exciting as the years after 1905 when Alfred Stieglitz, tired of the pseudo-artistic, highly posed artificiality of the salons who desperately tried to imitate paintings, opened the Little Gallery of the Photo-Secession at 291 Fifth Avenue, New York.

The realistic work of the Photo-Secession photographers, including Steichen, Kasebier, Coburn, Strand and White, breathed fresh air into the musty salons. The gallery went beyond photographs. The paintings and drawings of such scandalous modern artists as Marin, Matisse, Picasso, Brancusi and Rodin were also exhibited on an equal footing with the photographs. *Camera Work*, a quarterly published by Stieglitz, contained reproductions of the photographs and the drawings plus essays and criticisms on photography and painting. Today, copies of *Camera Work* are sought after and highly treasured as collectors' items.

Nathan Lyons, editor of publications for George Eastman House, has attempted to impart the spirit of *Camera Work* to Doty's book by employing close copies of the old quarterly's physical size, typography and artwork.

Unfortunately, he has little or no cooperation either from Doty, whose text reads too much like a dull high school recitation of facts and dates, or from the engravers and printers who have reduced the glowing, brilliant photographic reproductions of *Camera Work* to smudgy caricatures of the originals. Alas!—H. K.

ALFRED STIEGLITZ, introduction to an American Seer, by Dorothy Norman, 66 pages, illustrated. Duell, Sloan and Pearce, \$6.95

"Over the years we have become ever more profoundly convinced that simply to look upon Stieglitz as a great master of the camera—although he was that to be sure—is to minimize the true nature of his total contribution," writes Dorothy Norman, explaining what the vision of Alfred Stieglitz has for the world today. "In his view, photography had far wider connotations: It symbolized for him an entire way of life—a philosophy of living—a dedication to truth, to art itself. Thus one must consider him in terms not only of his prints, but of his attitude toward art in general; in conjunction with his 'entire way of life,' including the manner in which he saw what happened to him. For Stieglitz was primarily the photographer in whatever he did, no experience being truly completed for him until he had, in turn, photographed it—whether in work, in picture, or, one even might say, in act. . . . He believed firmly that in one's way of seeing lies one's way of action. . . ."

This beautifully printed book, limited to 2,000 copies, with its excellent reproductions of great Stieglitz photographs, contains the poetic essence of the "entire way of life" lived by the dean of modern American photography and leader of the Photo-Secessionists, who died in 1946. It is exciting, thought-filled, uncobwebby. There are conversations between Stieglitz and the photographers and artists. It has Stieglitz's reflections on photography, on art, on theater. It reveals a healthy, direct, mature artist with the rare ability to appreciate and desire to help and to exhibit the work of other artists. After all, all was art—sculpture, photography, painting. Its fortunes

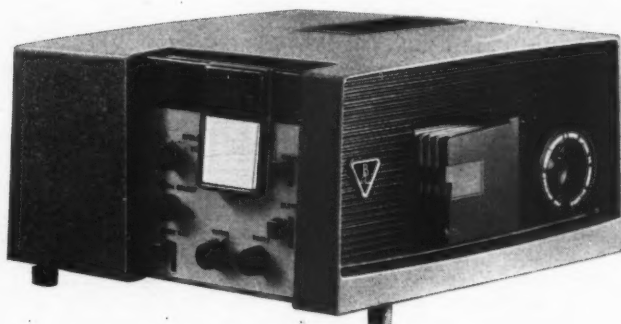
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THE WELL TRAVELED CAMERA

by the editors

Disregard down-to-earth picture taking rules if you'd like to make sharp photographs up in the air.

Have you ever raised your camera to a plane's window in order to photograph a scene, then paused because you really didn't know how the photograph should be taken?

During a flight to Los Angeles (on my way to a Society of Photographic Scientists and Engineers convention in Santa Monica, Calif.), I decided to photograph some scenery as my TWA Superjet—at an altitude of about 28,000 ft.—passed over a few of our western states.

After a quick analysis of this unique picture-taking situation, I discovered that to make photographs from an airliner demands different techniques.

The following are the problems you must solve to make good quality scenics from any moving aircraft: What black-and-white and color films will produce the most desirable results? How should you determine camera exposure? Is the choice of shutter speed critical? Are filters necessary? What should you focus on? Can you make scenics with a normal focal-length lens or do you need wide-angle and telephoto lenses?

First let's settle when you should or shouldn't attempt to make an aerial scenic. If you can't see the ground—because it's covered by a heavy haze or a blanket of clouds—then leave your camera inside its case, sit back and relax. However, if you have a clear view—no clouds but a very slight haze (only rarely will there seem to be no haze)—here's how to record what you see.

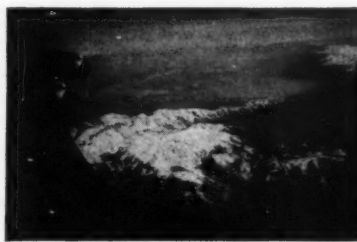
You are moving forward at a high speed (from about 150 to 600 miles per

hour, depending on the type of aircraft in which you're traveling). You are also vibrating (all planes do) and at the same time hitting air pockets and the like which cause your plane to rise and fall abruptly at various times. To make the sharpest photographs you must therefore use a fast shutter speed. Ideally, you should choose a film that is fast enough to enable you to use your top shutter speed. With color, either Ansco Super Anscochrome, E.I. 100 (available in 35mm and roll), Kodak High Speed Ektachrome, E.I. 160 (available in 35mm), or Kodak Ektachrome Professional, E.I. 50 (available in roll), should be used. For black-and-white, use a medium-fast film, such as Kodak Plus-X Pan, E. I. 160 (available in 35mm and roll), or Kodak Verichrome Pan, E. I. 125 (available in roll).

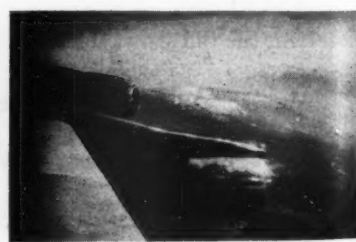
Once you've made a film choice, here's how to determine your camera exposure setting. With a reflected light meter (accessory or built-in variety) make your reading by pointing it down at the earth. Choose the f-number indicated for the shutter speed you plan to use. Then set your lens aperture at the f-number which represents one lens opening larger. This compensates for a false meter reading caused by extraneous light reflected into the exposure meter by haze or nearby clouds. It's a good idea to shoot an extra photo at a slightly larger lens opening if you think that clouds are reflecting a great deal of extraneous light into your exposure meter. The idea is to expose for the ground and not for the clouds.

The photographs below were made with a skylight filter and sun shade. Before going any further let's settle the sun shade question. Use one. That extraneous light we discussed must be

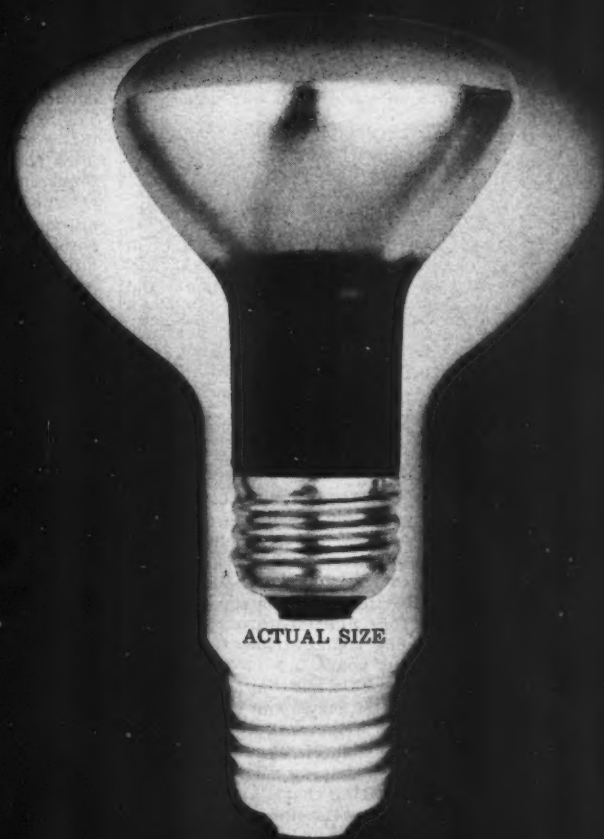
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Rocky Mountains taken from lounge with wide-angle lens focused at infinity. Leica M3, 35mm f/2 Summicron.



Wing of TWA Superjet from window seat with normal lens focused at 30 ft. Leica M3, 50mm f/2 Summicron.



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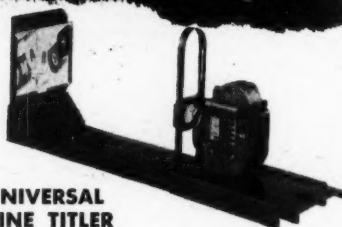
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the MOVIE MAKER

by **MYRON A. MATZKIN**

Before sending your film out to be sound striped there are several facts you should know.



Having your processed film magnetically striped so a sound track can be added entails no more effort than a trip to your local camera shop. Striping can be done right at the

shop if facilities are available, or else the dealer may send it out to a film laboratory. Knowing something about the types of striping and the problems faced by the striper can help you get the best results.

I talked to Al Armour, Vice President of Frederick F. Watson Co., Inc., a New York film laboratory that has been adding sound stripes to film for a number of years.

Al first pointed out that many people were still a bit hazy about what a magnetic sound stripe really is, or how it gets on the film. He summed it up:

"Magnetic striping, as you know, is an oxide coating that's applied to the outside edge of the film. It does not in any way overlap or interfere with the sprocket holes or picture area. Right now, there are two general ways of applying the stripe. It can be applied as a liquid which dries and hardens, or it can be laminated to the film. In the lamination process the stripe, looking very much like ordinary recording tape but much narrower, is actually glued to the film."

Al also cleared up the differences in sound stripe widths and where the various widths are used.

"The quality of sound depends to a great extent on striping width. Naturally, the wider the track, the better the sound recording can be. However, the size and type of film determines the width. The 100-mil width—which gives the best sound reproduction—can be used only on single-perforated 16mm film.

"The 50-mil width is usually added to a 16mm film that already has an optical sound track. This makes it possible to have a permanent optical sound track in one language while the magnetic track can be used over and over again for translating into any other language—depending on the

country where the film is being shown. The State Department has been using this system for its technical training films employed in overseas assistance programs.

"The 30-mil width must be used on all double-perforated 16mm films and 8mm footage. Actually, even the 30-mil stripe gives more than adequate sound reproduction. Remember, though, that sound recorded at 24 fps will be better than sound recorded at 16 fps on any width—30, 50 or 100 mil."

Before sending film to the lab, take into account the fact that the striped film will occupy more space than the unstriped film. Here are safe capacities before striping.

Reel Size	Safe Capacity
400 ft.	360 ft.
600 ft.	550 ft.
800 ft.	720 ft.
1200 ft.	1080 ft.
1600 ft.	1450 ft.
2000 ft.	1800 ft.

One of the major claims for magnetic striping—whether 8 or 16mm—is that almost any processed film can be striped. Al backed this up—but with some important reservations.

"The film must be in good condition. Brittle footage just won't do. Either spend the money to have it rejuvenated or don't bother striping the footage. Also, check those splices. The film must be run through a machine to apply the striping. The machine applies tension to the film—enough to break weak or badly made splices. Either cement or Mylar splices can be used. However, if you use Mylar, the tapes must be of the type that does not overlap the striping area, since the magnetic stripe will not adhere to a Mylar surface. Incidentally, the striping goes on the base side of original footage and on the emulsion side of prints made from an original positive or negative, whether color or black-and-white. But that's not terribly important for the amateur to know since a lab with a well-trained staff will put the striping where it belongs."

Usually, amateurs are told to edit their film before having it striped—since sound quality may be impaired by post-splicing. According to Al, this is not necessarily true.

"There's no noticeable 'click' in the sound track if the splice is properly made after striping. But if the stripe is on the base side, it should be removed where the two pieces of film overlap.

"Remember, though, that the stripe

can be dissolved by splicing cement. So don't let the cement run over adjacent track-areas."

I asked Al if he had any special advice for cleaning striped film.

"Don't use carbon tetrachloride since it dissolves the striping." (Note: MODERN advises amateurs never to use carbon tet because of its insidious toxic effects.) "There are several good cleaners on the market that do not include carbon tet—Dupont Freon 113, for example."

Al suggested that striped film be stored far from any magnetic substances—the permanent magnet in a speaker, for example—since a magnet can erase part or even all of the sound recording. Storage in a metal film can is all right, however.

The big question in some minds is how long a magnetic sound stripe will last. Most opinions are that a magnetic track will outlast the film.

Al did say that film striped 5 years ago by Frederick F. Watson, Inc., is still good.—THE END

MODERN COLOR

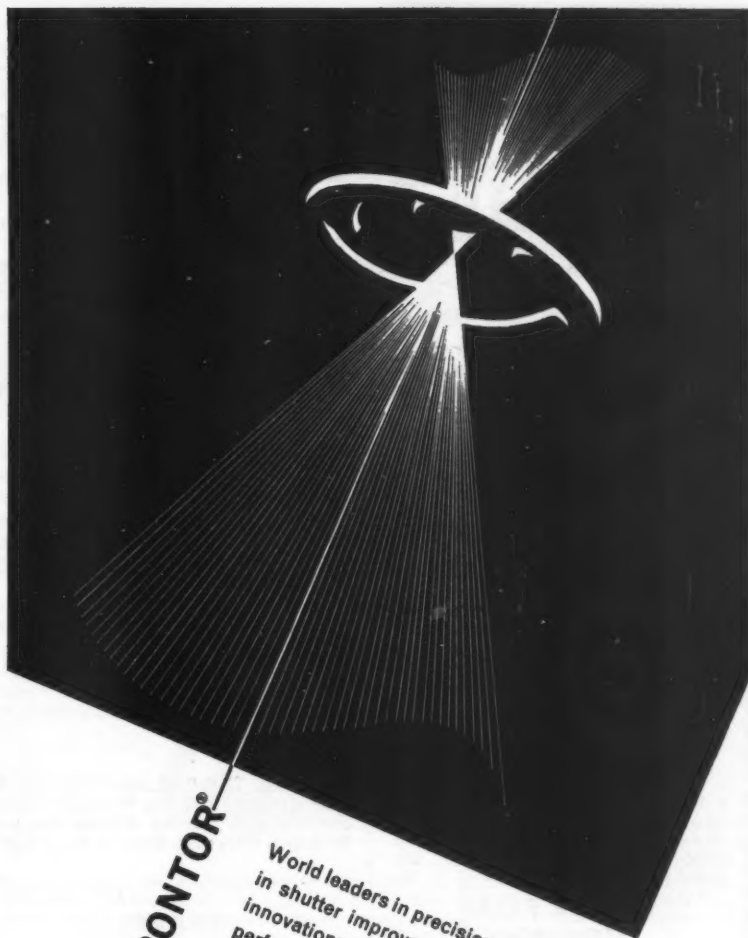
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box and the above setup, the opal glass should be masked down to an opening slightly larger than the mount opening, to prevent stray light from reaching the lens.

Sidelights on color

More news from Ansco: *Color Fun* is the title of a new 50-cent, 48-page Ansco Data Book devoted to the subject of making better color slides with Anscochrome and Super Anscochrome films. It's beautifully and profusely illustrated in color. Its helpful text covers films; exposure; shooting outdoors; and shooting indoors by windowlight, flash, flood and available light. Also discussed are special occasions; seashore shots; travel and sceneries; fill-in flash; experimental color, and slide shows. It is written in a light style—which doesn't keep it from being packed with information.

Another item recently announced from Ansco is the Ansco Exposure Calculator for long bellows extension, which gives exposure factors for magnifications from $\frac{1}{4}$ to 10 diameters, for extensions from 2 to 40 in. and lenses from 2 to 24-in. focal length—all on an easy-to-read $5\frac{1}{2}$ -in. dial. The back of the calculator is a Photographers Proportion Rule. Price \$1. There's also the Ansco Color Guide and Gray Scale for the Graphic Arts. It has carefully controlled color patches in primary and secondary colors, as well as a gray scale. While this scale was intended for use by photoengravers, it makes a good standard test object for checking color film rendition. Price \$1.25. More details on these and other Ansco Products may be obtained by writing Ansco, Customer Service Dept., Binghamton, N.Y.—THE END



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NATIONWIDE Free Film

NEW BOOKS

(Continued from page 50)

were one. The book sparkles with Stieglitz' ability to cut quickly to the truth. "One must never hold back from telling the truth," he said. "We protect one another only by telling each other the truth." He also explained, "I prefer to steer clear of ugliness, and move along the path of development, not self-seeking," and "I cannot grasp why ugliness should be compared to a fine line."

Aside from the simple objective chronological biography with important dates which has been thoughtfully included, the book represents a very subjective, lyrical study of Stieglitz as related by his close friend, Dorothy Norman. In no way can it be considered a full, well-rounded critique of the artist's life, thoughts and actions. But what we do have could well be studied by those hell-bent on muddying the crystal-clear artistic philosophy of photography:

"At the opening of the exhibit when Gertrude Kasabier appeared, she said to me (Stieglitz), 'What is a Photo-Secessionist?' My answer was, 'Do you feel that you are?' She said, 'I do.' 'Well,' I replied, 'that is all there is to it.'"—H. K.

CHENDRU, THE BOY AND THE TIGER, photographs by Astrid Bergman Sucksdorff, English text by William Sansom, 56 pages. Harcourt, Brace & Co., \$3.25*

This is the story of Chendru, a young Indian boy of the Muria tribe, and his own personal pet tiger. The color photographs impart a great deal of information about the Murias and their way of life; the text is simple, clear, and compelling. Although it is a children's book, Chendru will appeal to anyone of any age who sometimes dreams of adventure.—P.C.

THE AGFA GUIDE, by Dan Daniels, 128 pages, illustrated. Universal Photo Books, \$1.95*

One hundred twenty-eight pages is not much space in which to cover both the principles of photography and the wide range of equipment and materials produced by Agfa. It would be a difficult task even if the chapters were well organized and the writing concise. Though Daniels' knowledge of the subject seems excellent, and his treatment of Agfa cameras is sound, he deals too perfunctorily with other Agfa products and flounders at wasteful length through the general photographic chapters. Clearer thinking and more careful writing would have obviated such confusing explanations as those of the old and new ASA ratings or the use of depth of field, and would have pruned away such silly, paper-wasting statements as "Flash is a form of artificial light. This is true of both electronic flash and flashbulbs."—W.H.J.

*These and other books are available through AMPHOTO; see pages 48-49.

TRAVEL

(Continued from page 52)

prevented from directly entering your lens. Of course, it can't all be kept out, but by using a lens shade you'll prevent much of it from entering and thus causing a foggy image on your film.

Use a skylight or a 1a filter for color and black-and-white shots. It will cut through some of the ultraviolet haze and give you sharper results than if you used no filter at all. You needn't increase exposure for this filter since its light transmission reduction properties are negligible. For black-and-white you may also try using a yellow, deep yellow, or red filter. These will increase image contrast and in many cases produce sharper-looking results. One caution, however: don't forget to apply the appropriate filter factors with these filters.

Once you've chosen the scene, decide whether you want to include part, all, or none of the wing or any other portion of the plane in the picture. If you don't like the particular seat you're in, move. Some planes have a lounge—try shooting from this.

Your normal lens will often produce the most pleasing scenics. Of course if your lens is non-interchangeable or if you have no other lenses, you have no choice. Sometimes (see photo left,

page 52) a wide-angle lens will help increase picture impact by getting a little extra area into your scenic. However, if you just want the scene with no part of the plane showing, a telephoto lens may be a help.

What do you focus on? If you just want the scene and don't care about the plane, focus your lens at infinity. If you'd like to get the wing or some other part of the plane in sharp focus (see photo, right, page 52) then focus on a point about one-third of the distance from your cabin window to the tip of the wing. You should find this distance to be about 30 ft.

If you're using an electric eye camera and you can't select shutter speed or aperture, set the film speed indicator at one-half the speed of the film you're using (with skylight or no filter over lens) to compensate for exposure error caused by the haze. If you're using some other filter, also apply its exposure factor as you normally do. If your camera allows you to select shutter speeds, set it at the fastest one. Then set the film speed as above, and shoot.

As a final bit of advice, I suggest that you attempt all picture taking either before or at least an hour after you down the refreshments served aboard your plane, to be sure you can focus and steady your camera for the sharpest and clearest results.—E. M.

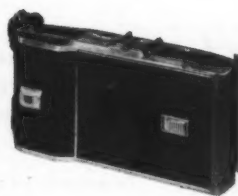
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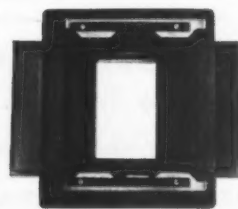
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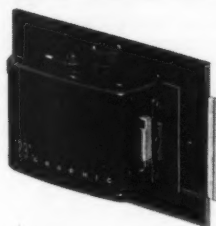
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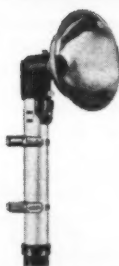
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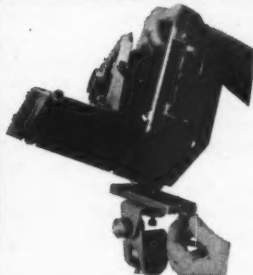
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35MM

by JOHN WOLBARST

**How to choose a 35mm camera,
Part 3: Features desirable in both
reflex and viewfinder types.**

In order to be able to make a picture of excellent technical quality, a camera needs only three features: (1) A good lens which can be focused sharply; (2) a reasonably accurate and consistent shutter; (3) a body which holds the film in the exact plane of focus and is light-tight. All other features are luxuries.

Fortunately for us, camera manufacturers take a somewhat less Spartan view, with the result that today's cameras are loaded with features. In fact, in some cases so much attention has been given to "features" that the three basic necessities seem to have been slighted, more or less.

In future columns I'll discuss in detail features of single-lens reflex and viewfinder 35mm cameras. Right now, here are some purely personal opinions about features common to both types of cameras, plus some ideas on how to evaluate them.

Film advance lever: This has virtually replaced the winding knob. I see no advantage in a system requiring more than one stroke. Is the lever easy to use with the camera vertical or horizontal, or does it require extra skill or effort? Make sure you can get your thumb behind it easily to start the stroke. Can you advance film with the camera at eye level without danger to eyeballs? Test all this with film loaded in the camera.

Film rewind crank: A fine idea, but some are so badly designed as to be uncomfortable or painful to use. Test it with a loaded film.

Are the markings clear?

The numbers: There's no excuse for tiny, unclear, low-contrast characters for shutter speeds, f-numbers, etc. F-numbers should be linear spaced—each clickstop equidistant from the next, not becoming jammed together at the f/16 end of the scale.

Shutter-speed dials: While it's more convenient to have all speeds on one dial, there's nothing wrong with a two-dial (high- and low-speed) system for a focal-plane shutter provided the numbers are legible and sufficiently spaced so it's easy to set the correct speed quickly and without having to make tiny movements of the dial. Whether or not the speed can be set before cocking the shutter is a question of convenience and of individual preference.

Recently I used an expensive new camera, top grade in all respects, except that after shooting about 200 pictures in a morning I was thumbsore and eye-weary from setting speeds on a badly designed dial.

Focusing: Is it physically easy to focus in both vertical and horizontal positions, in dim and bright light? When you turn the lens, are you likely to also accidentally change the lens opening, and vice versa? Avoid this common design failure like the plague.

Lens mount: On better cameras the lens moves straight in and out when focused, without rotating. If the entire lens rotates when focused this can be a nuisance (numbers may get out of sight, etc.) but need not be a sign of lower quality. Front-element-only focusing is not found on top quality cameras today. However, a lens well designed for this purpose may produce acceptable pictures.

Watch for shakiness

Whatever the type of lens mount, see if you can rattle the part of the lens that moves; also, the entire lens in its mount, if interchangeable. If it's shaky when new it will get worse very soon. Avoid it.

Film take-up spool: Does it wind the film inside out or inside in? I have excellent cameras of both types. The inside-out wind provides quick, positive engagement of the drive sprocket and the film sprocket holes, an advantage when loading. But it also subjects the film to sharp bends and greater stress than the inside-in system. It has been my experience that in extremely cold

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developer combinations.**

weather certain types of relatively brittle 35mm films are more prone to break at the drive sprocket when wound inside-out than when wound inside-in. The inside-in, or straight line, take-up puts less strain on the film. However, I have found that it is also less positive in engaging the sprockets and film holes when loading. This is particularly true with cameras having "floating" take-up spools, which can be a nuisance.

(Continued on page 110)

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the LARGE CAMERA

by **ANDREAS FEININGER**
Staff Photographer for *Life*

Traveling with the large camera:
here's how you can minimize its
size and weight.



The greatest problems when traveling with a large camera are weight and bulk. As a matter of fact, I know of photographers who have renounced the large camera merely because they got

tired of lugging all the equipment around, although they fully realize that large negatives are superior to small ones in terms of technical print quality. For those readers who are on the brink of following their example, here are a few pointers on how to lighten the load.

Choose the right camera

Camera size. The unique advantages of large cameras are of type as much as of size. Simplicity of construction, ruggedness, versatility, individual front and back adjustments (swings), individual film processing, immediate change-over from color to black-and-white and vice versa, a separate shutter for every lens (in case of shutter failure—most common cause of all camera breakdowns—only one lens is out of the running instead of the entire camera), flash and speedlight synchronization at all shutter speeds, etc., are just as important as negative size. Consequently, to those who wish to save on weight and bulk without giving up the advantages of the large camera, I recommend trading their 4 x 5 for a smaller size "large camera" such as, for example, the Linhof Super Technika 2¼ x 3¼, the Linhof Technika Press 2¼ x 3¼, or the Plaubel Peco 2¼ x 3¼. And believe me, the difference in the quality of prints made from 2¼ x 3¼ and 35mm negatives is still quite remarkable.

Camera type. As all large-camera photographers know, large cameras come in two different types (disregarding, for the moment, the now obsolete large reflex cameras): flat-bed folding cameras, and monorail (or twin-rail) cameras. For the traveling photog-

(Continued on page 108)

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50' Kodak Magazine, Tri-X Negative	3 for \$2.95
50' Kodak Magazine, Super-X Reversal with processing	2.75
50' Kodak Magazine, Linograph Pan	3 for \$3.95
50' Kodak Magazine, Super-X for Simplex Pocket	\$2.25
50' Ansco Magazine, Hypan Reversal with processing	\$2.95
100' Anscochrome, 16mm Daylight	\$4.95
100' Anscochrome, Tungsten or Daylight	\$4.25
100' Kodak Plus-X, Ansco Supreme Reversal	\$1.95
100' Supreme Reversal, single perforated	\$2.15
100' Kodak Background-X, Super-XX Negative	\$1.70
100' Kodak Linograph Ortho or Pan	\$1.50
100' Diabold Microfilm unperforated	\$1.85
200' Kodak Super-X Reversal	\$3.75
200' Kodak Plus-X, Tri-X Negative	\$2.95
200' Kodak Background-X Negative	\$1.95
200' Kodachrome including Kodak processing	\$12.95
400' Anscochrome, Tungsten or Daylight	\$16.50
400' Kodachrome, Type A	\$19.50
400' Ansco Color Negative, Tungsten	\$9.50
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400' Kodak Positive High Contrast, Type 7363	\$3.95
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Size	Type	Quan.	Price
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2 1/2x3 1/4	Kodak Super-XX Film Pack	12	\$1.25
4x5	Kodak Infra-Red	25	\$2.95
4x5	Ansco Supreme Press Film Pack	12	\$2.25
4x5	Ansco Commercial Ortho	25	\$2.25
4x5	Kodak Tri-X Film Pack	12	\$2.10
4x5	Verichrome Pan Film Pack	12	\$1.95
4x5	Anscochrome, Daylight	10	\$3.95
5x7	Anscochrome, Daylight	10	\$5.95
5x7	Kodak Contrast Process Ortho	25	\$4.10
8x10	Kodak Super Speed Ortho	25	\$4.95
8x10	Ansco Process	25	\$2.95
8x10	Kodak Super Ortho Press	25	\$2.95
8x10	Ansco Triple S Ortho	25	\$5.50
8x10	Ansco Commercial Process Ortho	25	\$5.95
8x10	Kodak Contrast Process Pan	25	\$4.95
8x10	Kodak Ektachrome, Daylight	10	\$5.95
8x10	Ektachrome, Type	10	\$6.95
11x14	DuPont Process Pan	10	\$2.50
11x14	Kodak Contrast Process Pan	10	\$3.95
20x24	Ansco Commercial Ortho	10	\$12.95
20x24	Haloid Ortho	10	\$29.50
20x24	Kodak Contrast Process Pan	24	\$24.95
24x30	Ansco Commercial Ortho	10	\$6.50
10x10	Ansco Printon	10	10
8x10	Ansco Color Mapping Paper	144	\$22.50

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5x7	SW-SM, water resistant	3	100	1.95
8x10	SW-G	1-2-3-4	100	4.25
8x10	SW-G	Variable	100	4.95
8x10	SW-SM	3	100	4.25
8x10	SW-SM	Variable	100	4.95
8x10	DW-G	1	100	4.95
8x10	DW-G	Variable	100	5.25
8x10	DW-SM	1-2-3	100	5.25
8x10	DW-SM	Variable	100	5.25
8x10	DW-Silk	Variable	250	12.50
8x10	DW Eggshell	Variable	100	5.25
8x10	DW-SM Kodabromide	E2	100	7.95
8x10	Portraya Proof	2	100	4.95
10x10	SW-SM	3	100	3.95
10x10	SW-G	1	100	4.25
10x10	DW-SM	1	100	4.95
10x10	DW-SM	Variable	100	5.25
11x14	SW-SM	2-4	100	7.95
11x14	SW-G	Varigam	10	.95
11x14	DW-SM	4	50	5.25
11x14	DW-G Kodabromide	F1	50	4.25
16x20	SW-G	4	50	3.75
20x24	SW-G	1-2	50	9.95
20x24	SW-SM	1	50	7.95
20x24	DW-SM	1	50	9.95
20x24	DW-SM	G2	50	11.50
20x24	DW Lustrite Kodabromide	G1-2-3	50	13.50
20x24	DW-SM	1	10	2.95
20x24	DW-SM	Variable	50	7.95
9 1/2"x500'	SW-SG	3		29.95
9 1/2"x1000'	SW-SM Hispeed	Varigam		4.95
30"x30"	DW-SM	3		6.95
30"x30"	DW Lustrite Kodabromide	E4		2.95
40"x10"	DW-SM	4		5.95
40"x30"	DW-SM	2-3		47.50
20"x600'	LW-SM	3		7.95
8"x250'	Kodagraph Projection Positive			

G-Glossy SW-Single Weight DW-Double Weight
SM-Semi Matte GG-Egg Shell White Lustrite GG-Semi Gloss

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A complete kit to use with your 4x5 press or 8x10 view camera for precision copying. Can also be used as an enlarger for negatives up to 8x10. 20"x24" upright easel with 4 masking strips and 1/4" ruled scale. Two fluorescent lamp assemblies each hold three 40-watt 24" daylight type lamps. Original cost was over \$740.00 NOW COMPLETE WITH LIGHTS, EASEL AND STORAGE CASE . . .

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100' Kodak Super-XX	\$2.25
100' Kodak Infra-Red	\$2.95
100' DuPont 111-ASA 125	\$1.95
100' DuPont Superior IV	\$3.95
100' Kodak Background-X Negative	\$2.25
400' Kodak Hi Speed Infra-Red	\$9.95
400' Ansco Color Negative	\$29.50
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64 MODERN PHOTOGRAPHY

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I have a friend who says the reason you haven't tested the Contarex is the same as the reason you haven't tested the Leica—both are of such unquestioned excellence it would be senseless to test them. Is this true? Alex Ross, Bryte, Cal. Where has your friend been? The Contarex was tested fully in the July 1960 "Modern Tests" and the Leica M2 was put through its paces in the November 1958 issue.

I am in the market for a top-flight single-lens reflex and have just about narrowed my choice to either the Zeiss Contarex or Nikon F reflex. I would appreciate your opinion. Herman C. Felton, Atlanta, Ga.

We feel that the Contarex with its permanent eye-level prism has a mechanical precision and a quality of finish of each part that is extremely hard to beat. However, this has been at the cost of size, weight and handling ability. The Nikon F Reflex with interchangeable prism is a faster operating, smaller, light camera. Although it does not have the extremely accurate built-in and coupled meter of the Contarex and a diaphragm which compensates automatically for close focusing, the big difference in our minds is in focusing facilities. Do you want the full ground-glass area of the Nikon or will the split-image rangefinder plus narrow ground-glass collar of the Contarex be sufficient? The various focal length lenses made for each camera are of about equal quality, but the Nikon F lenses generally have larger maximum apertures.

Do you sell the cameras you test or do you keep them?—Jerry Wachter, Baltimore 15, Maryland.

Well! Cameras are returned to the manufacturers or importers after all staff members have had sufficient opportunity to use and examine them.

Could you tell me if any of the enlargers priced at \$30 or less with lens are acceptable by MODERN's standards?—Tim Pelton, Laramie, Wyoming. No.

Can a minus lens be used on a 55mm f/1.9 Steinheil Quinon lens with extension bellows to achieve telephoto ef-

fects?—C. W. Hardiman, Miami, Fla. Frankly, the only moderate telephoto effect achieved by using a minus lens on your 55mm Steinheil Quinon is hardly worth the effort—since the loss of sharpness would just about negate the gain in image size. A minus 5 lens would provide only about a 70mm effect. You'd get better results by enlarging the central portion of any negative shot without the minus lens. It's only when you use a rather long focal-length lens—such as 135mm—that you get adequate magnification in combination with a minus lens.

I am considering the purchase of a miniature Speed Graphic. Would the 101mm Kodak Ektar or one of the 105 to 115mm Zeiss Tessars give better results?—E. Herwig, Brooklyn, N. Y. All these lenses yield quite comparable results and we would not label one as superior to the others.

I plan to shoot exclusively mountain scenics in color with a Linhof 4 x 5 camera. Which lens available for the Linhof would you choose—the 150mm f/5.6 Symmar or the Zeiss Tessar 150mm f/4.5?—D. L. Jarrett, Boulder, Colo. The 150mm f/5.6 Symmar is an extremely good lens and we would rate it better in performance than the Zeiss Tessar 150mm f/4.5. You might also be interested in the Goerz Red Dot Artar lenses which are also extremely fine lenses—if a bit slower in maximum aperture.

I'm going to Europe this winter and plan to take two cameras. While I have used mainly 35mm Kodachrome at home I'm afraid it may be a bit slow for all-around winter use. Could you suggest a film that I might use?—C. E. Anderson, Detroit, Mich.

No color film can take the place of Kodachrome in respect to sharpness and color brilliance. Frankly, we would take two types of color film—either High Speed Ektachrome or Super Anscochrome, and Kodachrome. That way you will be prepared for a fairly wide variety of lighting conditions.

Which of these two compact cameras—the Petri Compact with f/2.8 Petri-

Orikor lens or the Olympus Pen with f/3.5 Zuiko lens—would you choose?—P. Weaver, Lafragua, Mexico.

Frankly, we feel both cameras are equal in optical and mechanical performance. Here's one instance where the choice is strictly personal.

Choosing a lens for my Leica IIIg has become a confusing problem. Leitz has marketed three versions of a 50mm f/2 lens—the Summar, the Summarit and the Summicron. Also, there are the Summarit f/1.5 and the Summilux f/1.4. The best lens seems to depend largely on the salesman you talk to. What would you do?—W. Wolfer, Lancaster, Penn.

The long-discontinued Summar left much to be desired—particularly at maximum aperture, where it had rather poor corner definition. The Summarit, also discontinued, was quite an improvement and had far better overall definition. The Summicron, which is the present standard 50mm f/2 lens, is truly an excellent optic—and perhaps one of the finest 50mm lenses available at any price. The Summicron is far sharper at maximum aperture than the Summarit and Summilux are at equal apertures. However, the Summilux produces better definition than the Summarit, which it replaces.

I have been told that the Sawyer's Mark IV twin lens reflex is the same as the Primos Jr. twin lens reflex 4 x 4 camera. Is this true?—W. R. Williams, Des Moines, Ia. Yes.

IN NEXT MONTH'S MODERN

Questions are as hot as ever in Too Hot To Handle.

I have been using bounce flash with M2B bulbs and Ektachrome, Plus-X and Panatomic-X film. Can you tell me how to eliminate flash reflection in the subject's eyes?—C. Randle, Vancouver, B. C.

Your flash reflector is probably at fault. Most modern reflectors, particularly the fan type, are not deep enough. Therefore, though the reflector is tilted away from the subject, the bulb projects sufficiently for some light to clear the edge of the reflector and strike the subject directly. We suggest getting the deepest reflector you can find. We're sure this will eliminate the problem.

Why doesn't MODERN offer a Photography Seal of Approval, such as offered by magazines in other fields, to advertisers you feel are trustworthy?—J. B. Cummings, Rochester, N. Y.

As a group of consumers buying everyday utensils such as pots, pans, watches, refrigerators, etc., along with millions of other consumers, MODERN's

(Continued on page 118)

SHOOT YOUR WAY OUT

FEEL BOXED IN BY CLICHES, CONVENTIONS? CUT LOOSE: FOLLOW ROTHSCHILD ALONG THE PATH TO CREATIVE COLOR

SURE WE ADMIRE the classic landscape, the finely detailed portrait, the well-exposed snapshot of child and puppy romping on the lawn. But we're also aware of another approach—the experimental—which when practiced with visual imagination and technical competence can produce such startling, dramatic and effective photographs as these by Norman Rothschild.

Are they art? We don't know. And neither, he claims, does Rothschild. How does he take them? With gadgets and special equipment, ranging in price from 60 cents for the lenses used for the photograph on *page 70*, to \$318.00 for the zoom lens used *opposite*. What do you need to do similar work?

First of all, imagination. You must be

ready and willing to investigate the photographic possibilities of anything and everything. Rothschild buys new gadgets even when he has no immediate use for them. Sooner or later an idea occurs to him—then he runs exhaustive tests.

Secondly, you will find that a single-lens reflex camera or a rangefinder camera with a reflex housing is almost essential. With it you can observe the exact effect of your experiments on the ground glass before actually making the exposure. Other special equipment—bellows, tripod, copy stand—will also be helpful. For the complete story of how these photographs were taken, see *page 71*.—PATRICIA CAULFIELD

Ferris wheel through f/2.8 Voigtlander-Zoomar lens, Exakta VX IIa, 4 sec. at f/11, Kodachrome Daylight Type.

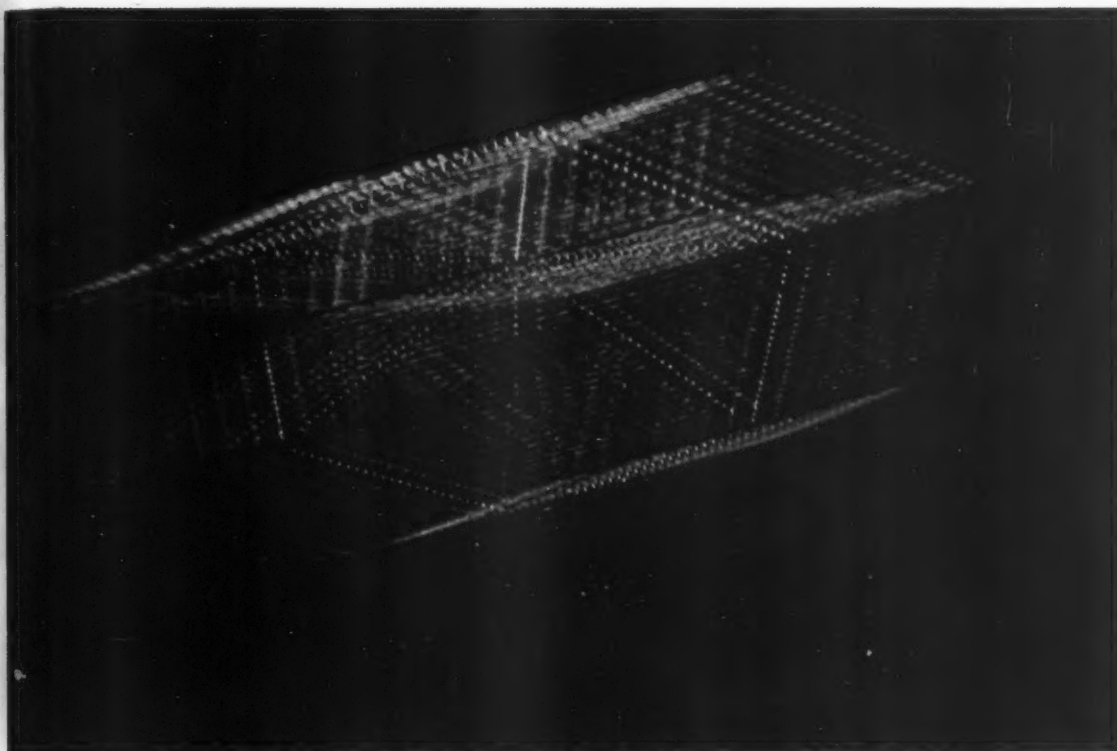




Window through exposure meter grid, 50mm f/2.8 Soligor on Miranda D, 1/25 sec., f/11, Kodachrome Daylight Type.

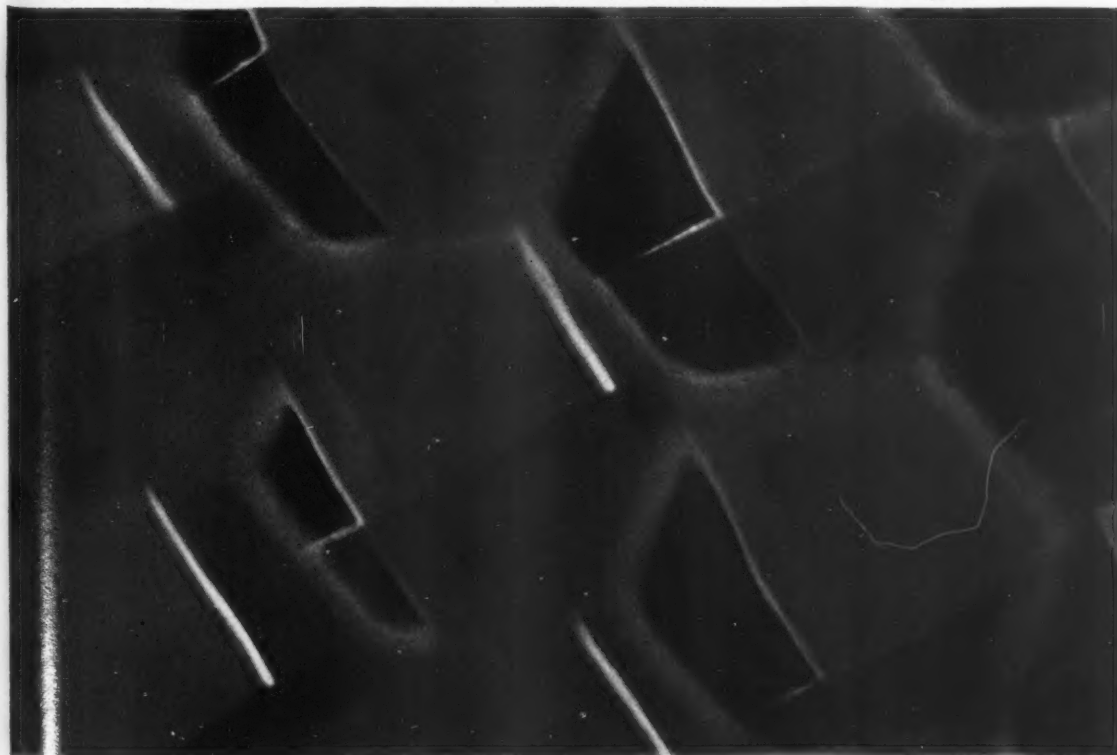
Cellophane by polarized light, Leica M3, Visoflex I, extension bellows, 135mm f/4.5 Hektor, 1 sec., f/11, Anscochrome Tungsten Type.





Whirling ride through ruled screen, 50mm f/2 Biotar, Exakta VX IIA, 1/25 sec., f/2.5, High Speed Ektachrome Type B.

Colored gels through exposure meter grid on special box, 90mm Macro Kilar, Miranda D, 1 sec., f/22, Kodachrome Type A.





WHAT YOU NEED AND HOW TO USE IT TO SHOOT YOUR WAY OUT & INTO CREATIVE COLOR

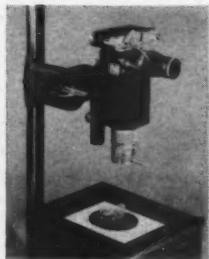
Ferris wheel through zoom lens: By zooming the lens while making the exposure, Rothschild created the effect of motion even though the ride was at a standstill. There were three problems in making this photograph. The first: calculating exposure for the colored lights. Since you can't measure the brightness of such lights with most meters, Rothschild relied on experience in deciding on an exposure. The second: Synchronizing zoom with exposure time. Rothschild practiced without film in the camera to perfect his timing (using an Exakta with slow settings between 1 and 12 sec. helped). The third: holding the camera steady while zooming. Rothschild steadied the camera on a fence at Palisades Park in New Jersey while he zoomed the full range from 36 to 82mm during a 4-sec. exposure.



Window through exposure meter grid: While cleaning the lenticular grid of his exposure meter, Norman Rothschild noticed multiple reflected images and decided to try to photograph images projected by the grid. After a number of experiments, he decided that the best technique would be to place the grid in an Accura Slide Duplicator to bring the images into focus. With the duplicator attached to a 50mm f/2.8 Soligor on a Miranda D, exposure on Daylight Type Kodachrome was f/8 and 1/25. Incidentally, you needn't dismember your meter to make such pictures. Spiratone sells the booster from which this grid was taken for \$1.75.



Cellophane by polarized light: After placing a No. 212 enlarging lamp 4 in. beneath opal glass set in the top of large wooden box, Rothschild covered the glass with polarizing material, on top put crumpled cellophane discarded from a cigarette package. Next, he mounted a Leica M3 with Visoflex I, Leitz Bellows Focusing attachment and 135mm f/4 Hektor on a Valoy II copying stand, pointed it down, and focused on the cellophane. Then he mounted a polarizing filter (factor 3X) on the lens, shifted cellophane and rotated filter until the colors appeared as in transparency. Reading taken with meter touching cellophane.

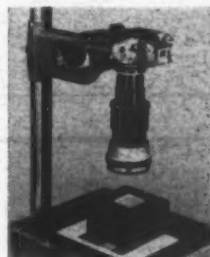


◁ Fire escape through two lenses, 98mm Achromats, Exakta VX IIa, 1/5 sec. at f/9.8, Kodachrome Daylight Type.

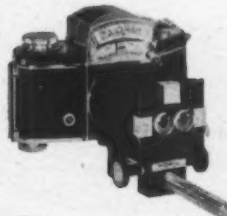
Whirling ride through ruled screen: Here, Rothschild shot through a ruled additive projection screen (clear 35mm film on which are inscribed 635 lines per in.) that is used to test the resolving power of microscope objectives and instruments and in spectrophotography. Rothschild used the material in a 35mm slide mount which he placed on a Kodak Gelatine Filter Frame Holder mounted on the camera lens (the screen can be attached just as effectively by simply taping it in place). No filter factor is necessary when using this material—the screen itself (Stock No. 115), is available through Edmund Scientific Corp. for \$1.



Colored gels through meter grid: Rothschild placed a 60W bulb (for focusing) and a Heiland Futuramic Strobonar (for making the final exposure) in a box topped by opal glass. On this he put colored acetate strips over which he positioned a small cardboard box with a hole cut in the top. On this he rested the exposure meter grid that he used in making the photograph of the window on page 68. A Miranda with waist-level finder and 90mm Macro-Kilar plus focusing close-up adapter was suspended over the setup by means of a Valoy II copying stand, and the lens extended for greatest magnification (1:1) in order to throw the strips out of focus.



Fire escape through two lenses: According to Rothschild, four is the maximum number of 98mm Achromats with an outer diameter of 15mm which can be attached to a 35mm camera bellows. (These lenses are obtainable from the Edmund Scientific Corp., Stock No. 6302, 60 cents each.) Rothschild used a ticket punch to cut holes in cardboard lensboard, attached lenses with Duco cement. Behind each lens he pasted a colored gelatine filter (one Wratten 32 magenta, one Wratten 44 blue-green). Then he taped the board to a Kopil bellows. To calculate exposure he divided the focal length of the lenses (98mm) by the diameter of the punched holes (10mm) to find that the f/number of each lens was 9.8. He estimated the filter factor as about 4X, and based his exposure on a reading taken with a Weston Master IV reflected light meter.





TAKING PICTURES AFTER DARK

NOT SO LONG AGO, taking pictures after dark meant an exercise in stretching and torturing the last ounce of speed out of an emulsion to produce a rather murky, unsharp, grainy image. This type of photograph became almost a symbol of night photography. As soon as someone successfully took a smudgy picture of wet cobblestones under a street lamp you could count on half a dozen or so lesser photographers aping the technique almost to the letter.

But there's at least one sensible way to avoid shooting trite night photos yourself: Become so well-grounded in methods and materials that you can let your imagination take over.

But what about these techniques? Y. Ernest Satow in his new book *Pictures After Dark* (Amphoto, Edition Bound Series, \$2.50, see page 120) provides a solid discussion of night photography methods. Making the book even more worthwhile is a load of information on the latest films, developers, and darkroom techniques.

Both from reading the book and from talking to Satow, we know that his approach to night photography is direct. He breaks the problem down to equipment, film, exposure, processing. (Continued on next page)

Left: Yoichi R. Okamoto, Rolleiflex, Proxar, Ilford HP3, 1/20 sec., f/8. Below: Bill Ray, Leica M3, Tri-X, 1/4 sec. (Black Star).



Satow is a strong advocate of the 35mm camera for night photography—whether indoors or out. "It's compact and therefore inconspicuous," he told us, "and it's adaptable to most night shooting problems."

But we found his thinking on equipment far from inflexible. It's obvious that most people are going to take night pictures with the cameras they already own. He feels that it's unlikely that an amateur or even many professionals will run out and buy a special camera for only occasional use. Satow sees almost any camera—even an 11 x 14 view—as a usable instrument.

"In fact, a photographer might be better prepared for any eventuality in night photography if he owned 2 1/4 x 2 1/4 and 4 x 5 cameras in addition to a 35mm," according to Satow. "At any rate, night photography is possible with almost any equipment."

As far as night photography is concerned, the era of working for hours in a darkroom to do the near impossible is just about over, in Satow's opinion. "The new films are fast enough to take pictures just as long as there is light—some light at least," he claims. Satow cites Kodak Tri-X Pan as one of the wonder films. "It can be rated anywhere from 320 to 800—depending on how you process it. Royal-X Pan is another marvelous film, available in 120 rolls or bulk 35mm, which can be rated at 1250 for normal shooting—or for real emergencies, a fantastic 8000. And despite its speed, Royal-X Pan can produce remarkably fine-grain structure, gradation and shadow details.

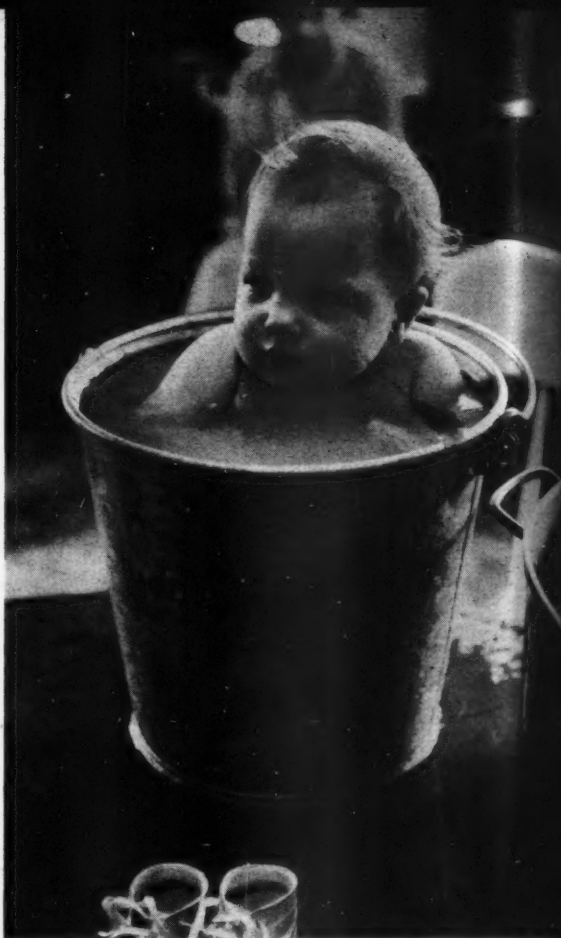
"And let's not forget Isopan Record—the fastest 35mm film available in standard cartridges," Satow adds. He also mentions Ilford HPS and Perutz Permania 25—as films representative of a compromise between Tri-X and the faster films.

Satow doesn't rule out the slower films for night photography: "Usually, the slower the film speed, the higher the quality." He advises using a medium speed film such as Kodak Plus-X Pan when the required shutter speed and lens aperture permit.

Satow even sees the slower films, Panatomic-X for example, as having potential for night shooting. Its speed—64 to 80 (if shadow detail is unnecessary)—is still usable if the camera is tripod-mounted for long exposures.

In Satow's opinion the use of the exposure meter is one of the most important elements in night photography. "Incorrect exposure has the worst effect on film of any error. And overexposure can be just as deadly as underexposure. Overexposure means blocked-up highlights and loss of detail and sharpness with the extremely fast films."

Getting the right exposure for black-and-white night pictures, whether made under a roof or outdoors, means first determining the bright- (Continued on page 112)

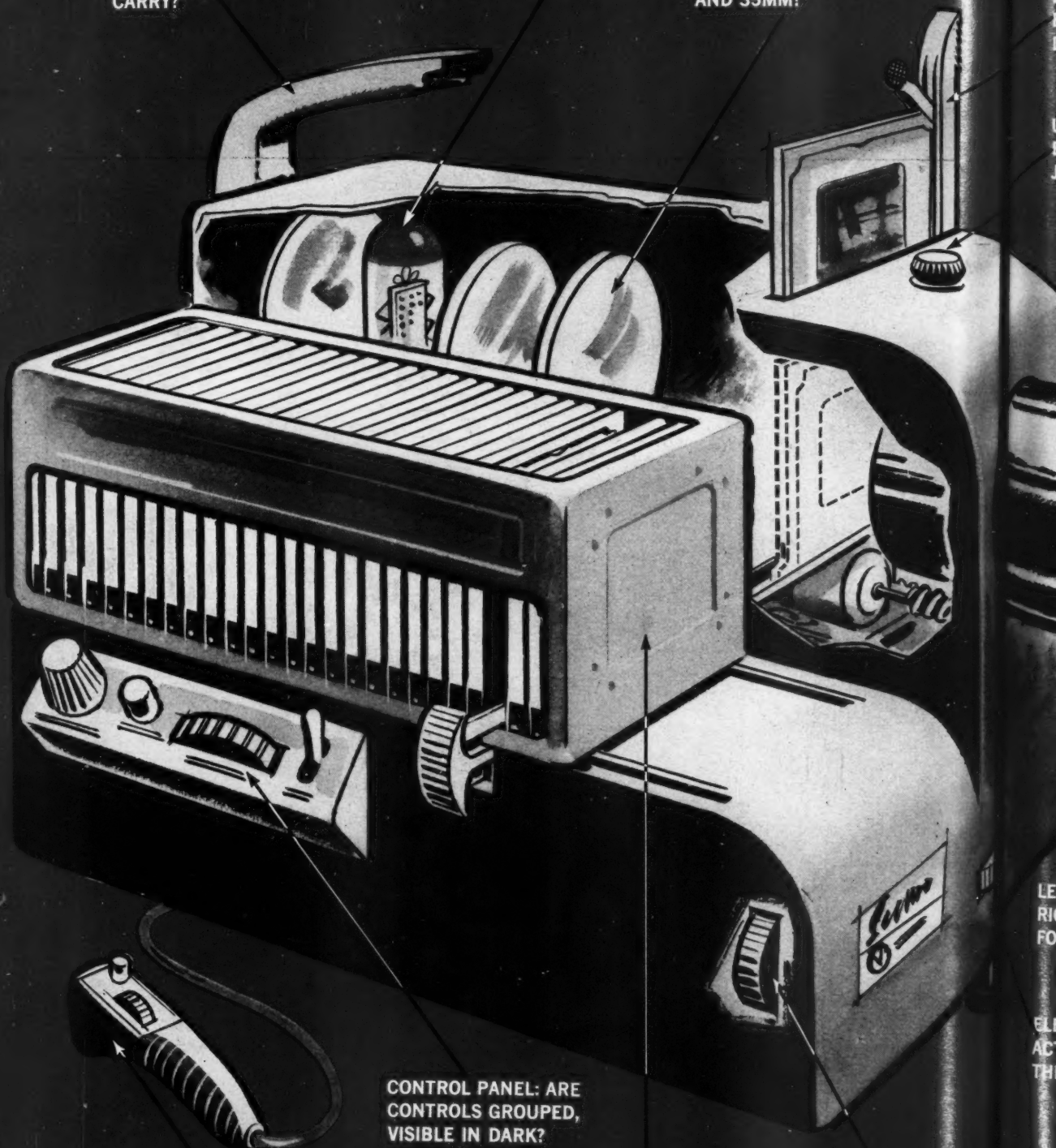


Upper right: Bill Ray, Leica M3, Tri-X, 1/25 at f/2.8 (Life magazine). Lower right: Bill Ray, Leica M3, Tri-X, exposure was approximately 1/10 at f/2.8. Opposite page: Bruce Davidson, Leica M3, Tri-X, exposure was approximately 1/30 at f/2.8.

PORTABILITY: DOES IT HAVE A HANDLE? IS THE UNIT LIGHT, EASY TO CARRY?

LAMP: 300 WATT, 500 WATT, HOW MUCH DO YOU NEED?

CONDENSERS: HOW WELL WILL THE PROJECTOR COVER SUPER SLIDES AND 35MM?

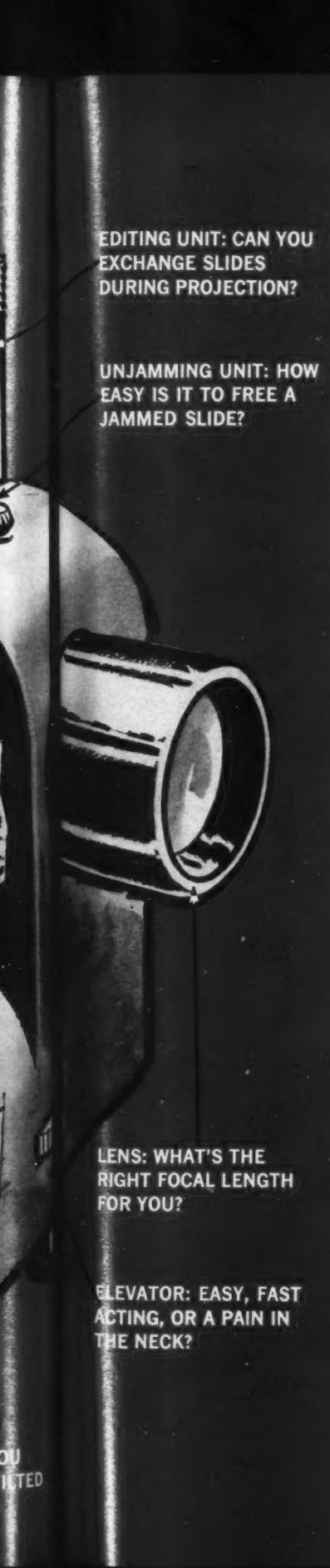


CONTROL PANEL: ARE CONTROLS GROUPED, VISIBLE IN DARK?

REMOTE CONTROL: CAN YOU RUN A WHOLE SHOW AT A DISTANCE?

MAGAZINE: WHAT TYPE? DOES IT TAKE ALL MOUNTS?

LEVELER: CAN YOU STRAIGHTEN A TILTED IMAGE?



EDITING UNIT: CAN YOU
EXCHANGE SLIDES
DURING PROJECTION?

UNJAMMING UNIT: HOW
EASY IS IT TO FREE A
JAMMED SLIDE?

LENS: WHAT'S THE
RIGHT FOCAL LENGTH
FOR YOU?

ELEVATOR: EASY, FAST
ACTING, OR A PAIN IN
THE NECK?

AUTOMATIC 35MM SLIDE PROJECTORS

MODERN SHOWS THE DIFFERENCES BETWEEN THE VARIOUS MODELS, TELLS YOU HOW TO CHOOSE THE ONE YOU NEED, AND HOW TO TEST IT TO MAKE SURE THAT IT WILL WORK PROPERLY

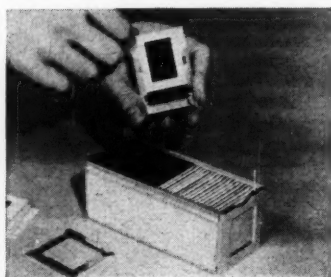
SLIDE PROJECTORS HAVE BECOME so versatile and magic, you can let the machine run the show, leaving you free to dazzle your audience with scintillating commentary. Their appearance is so spruced up, they can almost take a rightful place as a piece of living room furniture, rather than collect dust in the back of the hall closet. Instead of burnt fingers, constant shifting of the changer arm, messing with disorganized piles of slides, in the new automatic 35mm slide projectors all you do is press a button *once* (on projector or remote control) and start talking. With the remote cord, you can even join your guests or take your show out of the living room and into the lecture hall, running the show at a distance.

Since these automatic projectors are such precision instruments, they naturally are not inexpensive. Although it's possible to buy a projector without actually seeing it, personal preference is so important you should go into a store and examine each projector yourself. If you already have slides, as most of you do, and want a projector, MODERN has prepared this guide showing you the definite procedure to follow, once you've established what kind of slide magazine is best for you. MODERN feels the most important single element to consider, before you even flick an on-off switch, is the magazine, or tray, and your preference for a particular type here will largely determine the projector you will buy.

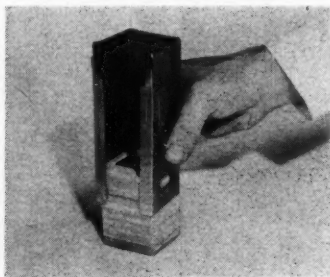
We've divided magazines into five different types, illustrated them (*page 78*), described what they can do, and, most important, what kind and how many slide mounts they take. There are, however, several projectors that don't use magazines—Brumberger, Opta-Matic. With them you stack a pile of slides or insert them one-by-one in the manner described under "Notes" on these projectors in the chart on *pages 80-81*.

Even after determining the proper slide tray for your own needs, there are altogether almost too many other features to consider. So that you won't be completely confused by the number and differences between projectors, we've gone into detail, on *page 78*, on five more important points to inspect. Besides these points, go over such items as actual size and portability. Are you planning to use the projector in one place, do you need one light enough to be carried from place to place? Line up three or four machines. Lift them, carry them around (*Continued on page 118*)

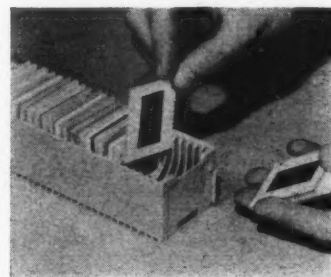
AUTOMATIC SLIDE PROJECTOR MAGAZINES MAY LOOK SIMILAR BUT THEY



Airequipt: Extremely compact (5½-in. long), light, metal magazine holds 36 slides in individual aluminum frames which prevent bending, warping, etc. Frames accept all cardboard, S.V.E. type (cardboard with glass windows), and very thin glass mounts. Most glass and plastic binders are too thick. Mounts can be intermixed in magazine. Frames fit snugly in magazine, can't fall out.

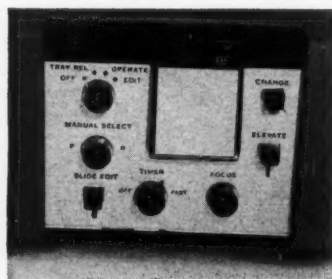


La Belle: Vertical, three-sided, open-end (6-in.) metal magazine holds 75 cardboard or 35 glass-mounted slides (9-in. model: 125 cardboard, 75 glass). Mounts cannot be intermixed. Loads quickly, holds greatest number of slides, but is not used to store slides permanently. Used with vertical gravity-feed type projector. Square metal weight, placed on top of pile of slides, keeps mounts in place.

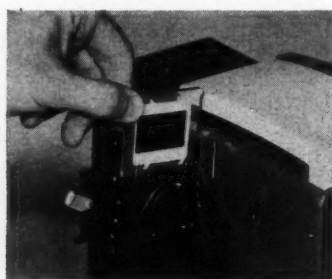


Open Groove: Light, plastic (9-in. long) tray holds 40 slides in individual groove compartments—the only tray accepting all types of mounts, intermixed, without using metal frames. Projector will jam if slides are not in near-perfect condition. Slides fall out if magazine is tipped over, but many such trays have a metal spring in each groove, which deters the slide from falling out.

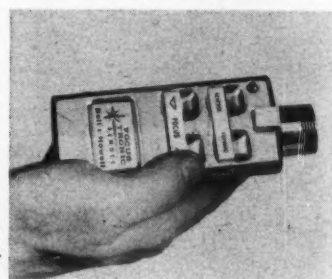
THEN THERE ARE FIVE ADDITIONAL IMPORTANT FEATURES YOU MUST



Control Panel: The growing tendency is to put as many controls as possible in one small panel, so you don't have to hunt all over the projector in the dark to find the buttons. All control knobs should be easy to get at, easy to grasp and turn. They should be partially illuminated so as to be visible in a dim room. Also handy is an editing screen, like the one shown above, for previewing slides.

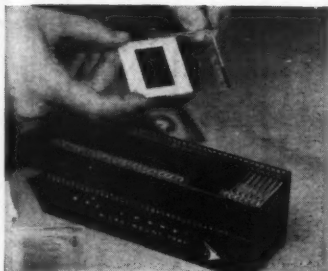


Editing System: Often during a slide show you may want to remove a certain slide from the tray. Many projectors have an editing feature. On some (above) you pull the slide frame out of the side of the machine; or through a slit in the top. In either case the slide must be in viewing position. But with the Leitz system, any slide not in viewing position can be pulled out of the tray at any time.

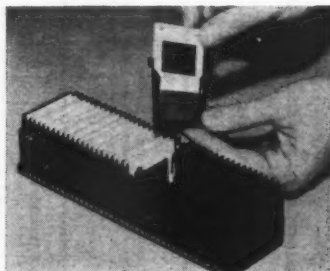


Remote Control: Remote operations range from a simple forward control to such multipurpose operations as forward-reverse, focusing, and, like the one shown here, a pointer ray. Pressing the focus button on some models moves the lens forward or back in very small increments. With other systems, the lens glides smoothly back and forth, stopping when you release the button.

DIFFER RADICALLY. WHICH BEST SUITS YOUR NEEDS?

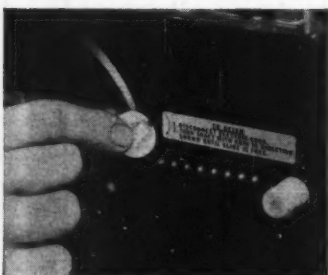


Bell & Howell Plastic Frame: Plastic (7-in.) magazine holds 40 slides in individual plastic frames, which protect slides from damage. Takes cardboard mounts only. Unique feature of frame is transparent, plastic back which holds slide rigid and flat to insure correct focus. Frames have tendency to spill out if tray is tipped over, but magazines are supplied with plastic cover for protection.

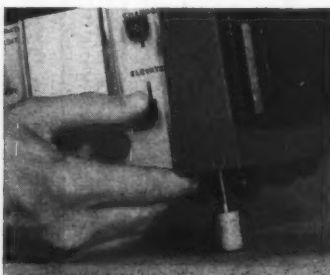


Kodak Metal Frame: Plastic (8½-in. long) magazine holds 40 cardboard mounted slides (no intermixing) in individual metal frames. Also available is a 30-slide capacity tray for all mounts—glass, plastic, metal. The latter accepts mixed mounts, including cardboard, but the spring clips on the frame must be adjusted to hold the thin mounts. Frames fall out if tray is tipped over.

CONSIDER. DO YOU OR DO YOU NOT WANT THEM?



Unjamming: Despite the best laid plans of mice and men, these automatic projectors do jam. Slides get bent, warped or damaged. A projector should have some method of unjamming them. Usually you have to turn off the projector, remove part of the housing and wiggle a few parts around until the slide pops free. Others have easier methods, such as turning a screw on the projector bottom.



Elevation: Projectors are elevated by two basic methods. A very fast way, shown here, is to raise the projector to the desired level and press a lever releasing a foot which springs down to the table top. More conventional is the method of turning a screw, racking out a leg until the desired height is reached. Some projectors also have a leveling control—a racking button for a second leg.

HOW TO TEST AUTO SLIDE PROJECTORS

Either at the store (many have places for demonstrating projectors) or at home (be sure you have a 10-day money-back guarantee) line up the projector perpendicular to a screen—matte screen if possible (low reflectivity, smooth surface). Now you're ready to test the following working parts.

Lens test: Use a slide you know is sharp, with straight vertical and horizontal lines (a city-scape is good; if you don't have one, shoot one) or a focusing slide, mounted in glass where possible, to keep it flat. Check the image for sharpness—lines should be sharp all the way along and show no color fringes (rainbows) at any point. Look along the edges of buildings for signs of curvature not apparent in slide (distortion). As you are inspecting the image you can also test the focusing mechanism for ease and smoothness of operation.

Illumination test: Insert 35mm slide (or superslide if you intend using them), focus, and substitute empty slide mount of same size. Check light on screen at center and at edges, visually and with exposure meter (incident type preferable). Keep meter at constant angle to screen and, if using reflected type, watch out for shadow. ASA standards say corners should be at least 65 percent as bright as center.

Heat test: Leave projector on for length of an average slide show (45 to 60 min). After 15 min. insert slide (one you don't want) in gate for 2 min. to see if it buckles (base becomes distorted). Gate area itself should not become unbearably hot to touch. Lamphouse should be hot but touchable at the end of test. Note the escape route of the hot air. It shouldn't be toward your face or hands.

Jamming test: Bend, wrinkle, crush a cardboard slide mount into unusable shape, straighten it, put it in the tray with good slides, start the projector, and see if it jams. Check how easy it is to get out if it does jam.

Miscellaneous operations to check during test: noise level—should not be annoyingly high or drown out narration. Light tightness—look for distracting streaks coming from the projector.

MODERN'S 35MM AUTOMATIC SLIDE PROJECTOR COMPARISON CHARTS. CHOOSE YOUR WEAPON!

NAME	WATTS	LENS	TRAY-TYPE, CAPACITY	SINGLE SLIDE FEED*	REMOTE CONTROL	TIMING CYCLES	NOTES	PRICE
AIREQUIPT SUPERBA 66	500	4-in. f/3.5	Airequipt (36)	1	Start-stop only by pneumatic accessory	2 to 30 sec.; "hold" button; forward-reverse	Vertical, horizontal tilt; down-draft anti-pop cooling; also takes Argus metal magazines (36)	\$94.50; remote acc., \$3.95
AIREQUIPT SUPERBA 77	500	4-in. f/3.5	Airequipt (36)	1	Forward-reverse, focus	2 to 30 sec.; "hold" button; forward-reverse	Vertical, horizontal tilt; down-draft anti-pop cooling; provision for slide-sound synchronization; also takes Argus metal magazines (36)	\$119.95
ANSCO ANSCOMATIC	500	5-in. f/3.5; 7-in. f/3.5 acc.	Open groove (40)	1	Start-stop only	5 to 60 sec.; "hold" control; no reverse	AnSCO Tag-a-Long trays (40) hook together for continuous show; vertical, horizontal tilt; remote control; 2 1/2" x 2 1/2" single frame of stereo slide manually; 5-in. lens has iris diaphragm; unjamming control	\$119.50; 7-in. lens, \$24.95
ARGUS ELECTROMATIC 500	500	4-in. f/3.5	Airequipt (36) (see Notes)	1 via adapter	Start-stop, focus, reverse	3 to 30 sec.; hold-reject controls	Argus supplies own trays (36); vertical, horizontal tilt	\$114.95
ARGUS PRESIDENT	500	5-in. f/3.5; zoom (see Notes)	Open groove (36)	1	Start-stop	5 to 60 sec.	Multiscope President model has 3.75- to 6.25-in. f/3.5 zoom lens; editing panel; vertical, horizontal tilt	\$149.95; with zoom lens, \$169.95
BALUCH & LONG BALOMATIC 655	500	5-in. f/3.5; 4-in. f/3.5 acc.; 7-in. f/3.5 acc.	Open groove (40)	1	Start-stop, reverse	4 to 30 sec.	Spring clips in magazines keep slides from spilling; preheating anti-pop; 5-in. lens; 7-in. lens; provision for slide-sound sync; preview screen on control panel; vertical tilt; unjamming control	\$119.50; 4-in. lens, \$19.50; 5-in. lens, \$29.50
BELL & HOWELL EXPLORER 746	300	4-in. f/3.5	Bell & Howell plastic frame (40)	1	Start-stop, reverse	—	Vertical tilt; takes cardboard slides only; "Point-A-Ray" pointer light built onto control cord switch	\$109.95
BELL & HOWELL EXPLORER 753RF AND 753RFY	500	753RF, 4-in. f/3.5; 753RFY, 3 1/2" to 4 1/2-in. f/3.5 zoom	Bell & Howell plastic frame (40)	1	Start-stop, focus, reverse	—	Same as 744 above but has no "Point-A-Ray"	RF, \$119.95; RFY, \$149.95
BELL & HOWELL EXPLORER 754 AND 754Y	500	754, 4-in. f/3.5; 754Y, 3 1/2" to 4 1/2-in. f/3.5 zoom	Bell & Howell plastic frame (40)	1	Start-stop, reverse	5 to 30 sec.	Same as 744 above	\$149.95; Y, \$175.95
BELL & HOWELL EXPLORER 754RF AND 754RFY	500	754RF, 4-in. f/3.5; 754RFY, 3 1/2" to 4 1/2-in. f/3.5 zoom	Bell & Howell plastic frame (40)	1	Start-stop, focus, reverse	5 to 30 sec.	Same as 744 above	RF, \$179.95; RFY, \$209.95
BRUMBERGER MODEL 1312	300	4-in. f/3.5	Airequipt (36)	1 acc.	Start-stop	—	Vertical tilt	\$83.95; edit. acc., \$2.95
BRUMBERGER MODEL 1331	300	4-in. f/3.5	No tray (see Notes)	2 (see Notes)	Start-stop, "hold," by acc. cord	9 sec.	Single slide feed when slide chamber is unloaded; no magazine; slides stacked, glass, cardboard, mixed; cardboard in Brumberger metal frames	\$99.50; remote control, \$4.95
BRUMBERGER MODEL 1357 AUTO-MAT	500	4-in. f/3.5	Airequipt (36)	1 acc.	Start-stop	—	Vertical, horizontal tilt	\$99.50; with Airequipt remote control changer, edit acc., \$2.95
GRAFLEX CONSTELLATION MARK II	500	4-in. f/3.5	Airequipt (36)	1	Start-stop	5, 8, 12, 15, 20 sec.	Vertical tilt; anti-pop warm-up; shows single frame of stereo manually	\$99.50

KEYSTONE K-511	500	5-in. f/3.5	Open groove (40)	None	Start-stop	5, 8, 10, 15 sec.	Magazines fit Keystone projectors only; vertical tilt	\$119.50
KINDERMANN AUTOMATIC 300	300	4-in. f/2.8; 3 3/4-in. f/2.8 acc.; 4-in. f/2.8 acc.; 3 3/4-in. f/2.5 acc.; 5-in. f/3.5 acc.	Open groove (36); acc. 70 capacity; mag. \$6.95; acc. bracket needed \$7.50	None	Start-stop	Timer acc. 4 to 60 sec.	Vertical, horizontal tilt	\$99.50; acc. lenses, \$25.95 to \$34.50; timer, \$32.50
KINDERMANN ESQUIRE	500	4-in. f/2.8 300 (see Automatic for acc. lenses)	Open groove (36 and 60 capacity models)	1	Start-stop, focus, reverse	Timer acc. 1 sec. to 3 min.	Projector focuses automatically without attention of operator; preheating of slides; slides can be heated; have spring clips to prevent spilling slides; vertical, horizontal tilt	\$159; timer, \$30
KODAK CAVALCADE 510 AND 510Z	500	5 1/2, 5-in. f/2.8; 5 1/2, 3 3/4 to 6 1/4-in. f/3.5 zoom	Kodak metal frame (40 cardboard or thin glass; 30 any type)	1	Start-stop	4, 8, 16 sec., reverse, hold, manual drive	Vertical, horizontal tilt; preheating anti-pop chamber; two-way lamp switch for 300 or 500W illumination; built-in pointer; provision for slide-sound synchronization	510, \$139.50; 510Z, \$159
LA BELLE PROFESSIONAL 88	500	5-in. f/3.5	La Belle (6-in. takes 75 slides; 5-in. takes 35 slides; 3 1/2-in. takes 125 slides; 7 1/2 cardboard, 75 glass)	See Notes	Start-stop	—	Single slides can be fed without magazine in place; vertical tilt; takes glass and cardboard intermixed; slides fed into gate by gravity; preheating anti-pop chamber; provision for slide-sound synchronization	\$154.95
LEITZ PRADOVIT F	300 or 500	100mm (4-in.) f/3.5; 85mm f/2.5 acc.; 100mm f/2.5 acc.; 120mm f/2.5 acc.; 150mm f/2.5 acc.	Open groove (30 and 50)	2	Cord: start-stop; acc. focus. Acc. supersonic control—start-stop, focus	—	Vertical, horizontal tilt; magazine can be reversed manually	W/300W, \$168; w/500W \$174; acc. lenses from \$31.50 to \$75
OPTA-MATIC CUSTOM 960	300	4-in. f/3.5	No tray— cardboard only	See Notes	Start-stop	8 sec.	Vertical tilt; individual slide insertion when slide chamber is unloaded	\$79.95
REALIST 960 SUPER AUTOMATIC	500	4-in. f/3.5	Open groove (45)	None	Start-stop	5 to 60 sec., reverse	Tray fits Realist only; vertical, horizontal tilt; slides preheated for anti-pop	\$87.50; without cycle timer, \$79.50
REYER 808	500	5-in. f/3.5	Open groove (36)	See Notes	Start-stop	4, 8, 16 sec.	Built-in pointer; vertical, horizontal tilt; iris control for automatic fade in and out; shows single stereo frame manually; provision for slide-sound sync; preheating chamber; trays fit. Reverse and Wollensak only	\$154.50
SAWYER'S 500-R	500	4-in. f/3.5; 5-in. f/3.5 acc.	Open groove (36)	2	Start-stop, focus, reverse	Reverse	Vertical, horizontal tilt; slides preheated for anti-pop; Sawyer "Flip-Top" tray tops lift to permit removal, replacement of slides at any time	\$99.95; 5-in. lens, \$20
SAWYER'S 500-T	500	5-in. f/3.5; 4-in. f/3.5 acc.	Open groove (36)	2	Start-stop, focus, reverse	5, 10, 15, 30 sec., reverse	Same as 500-R above but remote control overrides auto-timer	\$119.95; 4-in. lens, \$15
WOLLENSAK MODEL 815	500	5-in. f/3.5	Open groove (36)	See Notes	Start-stop	5, 7, 10, 15, 20, 40 sec.	Vertical, horizontal tilt; iris control for automatic fade in, fade out; extra condenser for super slides; shows single stereo frame; built-in pointer; tray fits Wollensak and Realist only; provision for slide-sound sync	\$134.50

*Type 1—Design permits removal, through slot or other device, of slide in viewing position. Type 2—Design permits removal from tray of any slide except the one in viewing position.



WHAT IS YOUR IMAGE OF A PHOTOGRAPHER? CAN HIS STYLE BE DISTINGUISHED BY HIS EQUIPMENT OR HIS USE OF CONTROLS IN SHOOTING, DEVELOPING OR PRINTING? IS HIS PERSONALITY THE FACTOR WHICH DETERMINES THE PICTURES HE TAKES? IS HE LOUD, AGGRESSIVE, DEMANDING? OR IS HE MILD, RETIRING, SHY OF ATTENTION AND OF PRAISE? HOW MUCH CAN YOU TELL ABOUT HIM FROM HIS PHOTOGRAPHS? FOR THE COMPLETE STORY ON THIS MONTH'S DISCOVERY, STEVE SCHAPIRO, SEE PAGE 111.

Pentecostal religious meeting, East Harlem, New York City. While working on a story in East Harlem Steve Schapiro met the leader of one of the numerous Pentecostal groups. He asked permission to photograph a meeting—and it was granted. Nikon S-3, 35mm f/1.8 Nikkor, Super Hypan film exposed at approximately 1/60 sec. and f/2.5.

Schoolboys' queue, La Tortue island off the coast of Haiti. While shooting a rural hospital in Haiti for *Jubilee* magazine Schapiro found time to take a number of pictures in and around this school. Nikon S-3 105mm f/2.5 Nikkor lens, exposure by meter in bright sunlight.

DISCOVERY #53



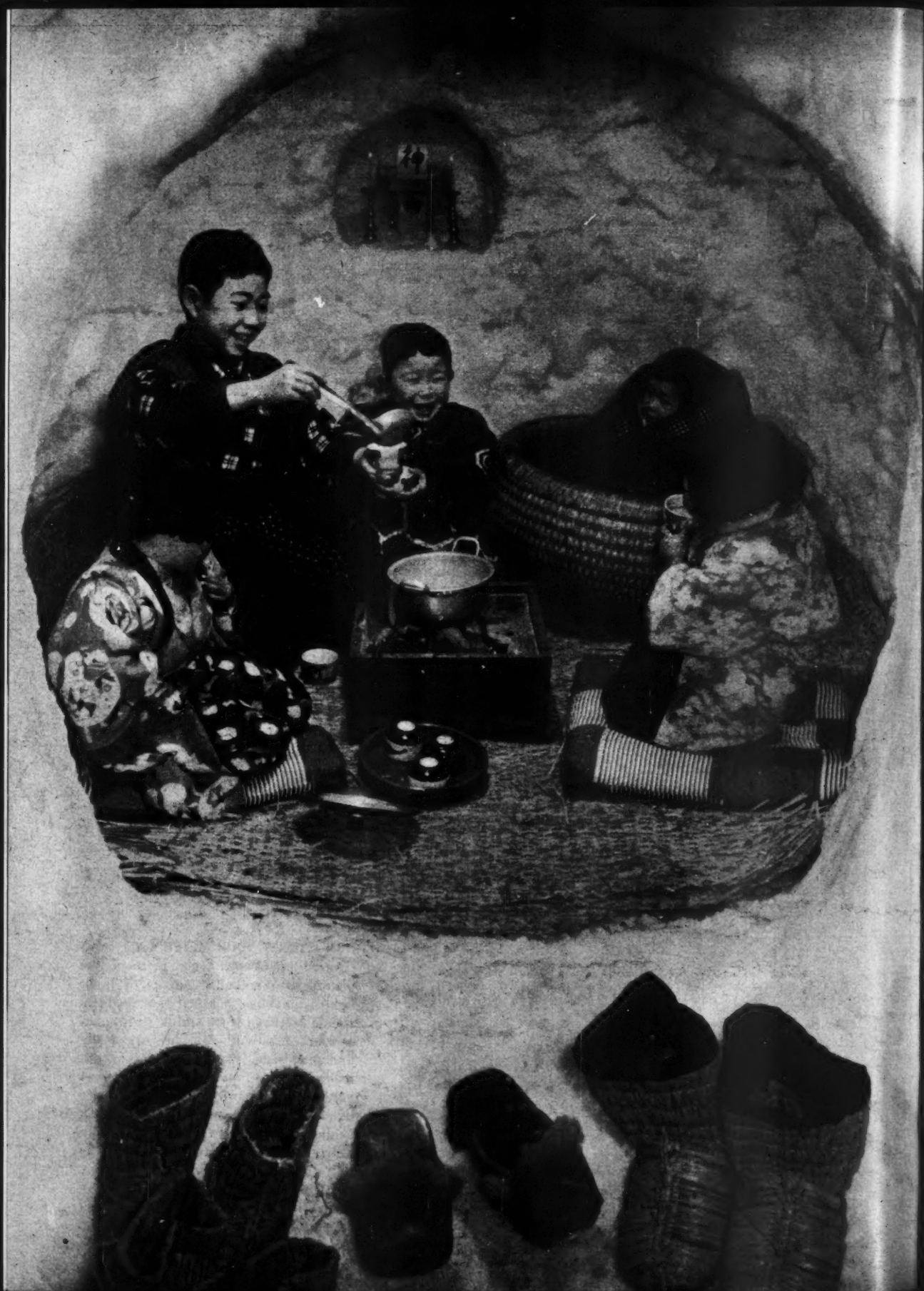




SHOOT THE MANY FACETS OF WINTER

LANDSCAPES, PORTRAITS, close-ups, action: the photographic potential of winter time is virtually unlimited. But don't shoot yet! Along with these special picture possibilities come some special technical problems. How do you calculate exposure when readings must be taken from snow? How can you find a new angle for a too-often-photographed winter sport? How should you shoot in a blizzard, or overcome the handicap of dull flat lighting to make a dramatic landscape? For the answers to these and other questions, read the captions below and on the following pages.

DON'T TRUST YOUR METER for a snow-covered landscape. Since most of the picture area actually consists of highlights—and since reflected light readings should be taken from middle gray tones—your negatives will be drastically underexposed. If you take an overall reading of this type of scene, we suggest you give at least two stops more exposure than indicated to ensure shadow detail, as did Heinz Finke when photographing Lake Constance in Germany. Finke made this dramatic photograph of landscape and sun with a $2\frac{1}{4} \times 3\frac{1}{4}$ Linhof, 53mm f/4.5 Biogon lens and yellow filter at 9 AM. Agfa Isopan F exposed at 1/100 sec. and f/5.6.



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SHOOT WINTER (cont.)

FOCUS ON TEXTURE in soft gray light. The dull, flat illumination of a midwinter day is excellent for portraits of children. Here, by focusing on a small boy's stocking cap, dotted with melting snow, Paul Matthews emphasized rough texture which contrasts with smooth skin of face. Matthews did not actually pose the child—but shot when he paused for a second in the midst of a snowball fight. Contax IIa camera, 50mm f/2 Sonnar lens, old Plus-X film exposed at 1/100 sec. and f/5.6, general reading with Weston Master II meter. ▽

◁ **USE DEPTH-OF-FIELD** scales engraved on your lens mount or focusing knob or track when your subject extends in depth. The only solution to a situation like this, where you need both fore- and background sharp, is to use the zone focus technique. Focus first on closest point which must be rendered sharp and note distance; then focus on farthest point, and note distance. Now, adjust focus on the camera so that these two points fall between the markings for a given aperture. Set aperture, choose shutter speed in accordance with it, and you're set to shoot the picture. Here Motoo Akiyama found f/8 sufficient to keep both Japanese children in back of snow house and their foreground boots in focus. Canon camera, 35mm Canon lens, 1/125 sec. on Neopan SS film.





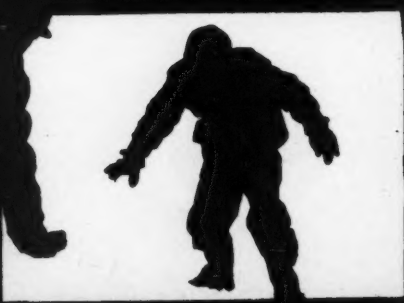


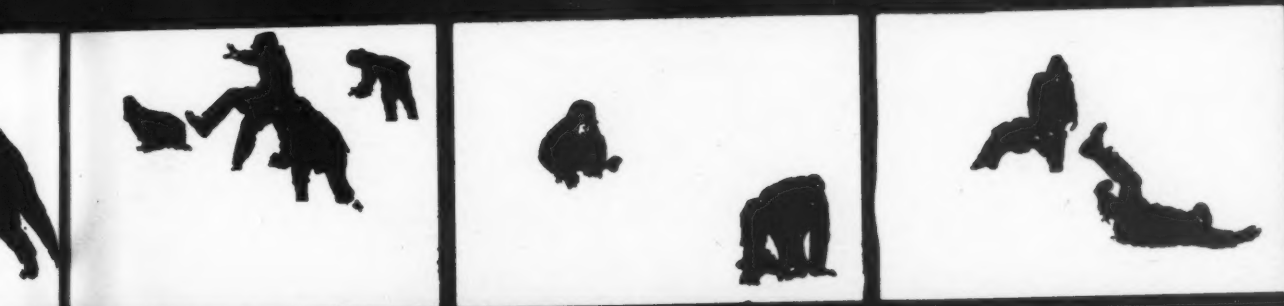
LENGTHEN A LANDSCAPE in printing to extend an existing design. The original photograph shot by Sonja Bullaty is one-half of that reproduced here. To create a wider-than-natural view, she made two prints from the negative, one in the standard manner, the other reversed right to left (to do this, she simply placed the negative emulsion side up in the enlarger). Then, she taped the two prints together, shot a copy negative, and made a print. Miranda D, Plus-X Pan film, f/1.9 and 1/30 during blizzard.

◁ **DISTORT THE SCENE** in shooting to dramatize dull winter's day. Here, Dave Attie overcame obstacle of flat, overcast light by shooting reflected landscape in trick mirror. Impact, usually achieved in landscapes by dramatic lighting emphasizing form and texture, is carried solely by exaggerated twists and turns of gnarled tree. Rolleiflex, Tri-X Pan film, f/5.6 and 1/60 by incident light reading with Norwood Brockway meter.

CLOSE IN ON DETAILS within a land-▷ scape. Watch for the mornings when frost has formed to shoot your outdoor close-ups. Here, Werner Stuhler focused on a raspberry leaf with a Rolleicord IV equipped with Rolleinar and Rolleipar, exposed Agfa IF at f/16 and 1/15 second. No exposure increase, such as that required when using extension tubes or bellows, is necessary when shooting close-ups with plus lenses.





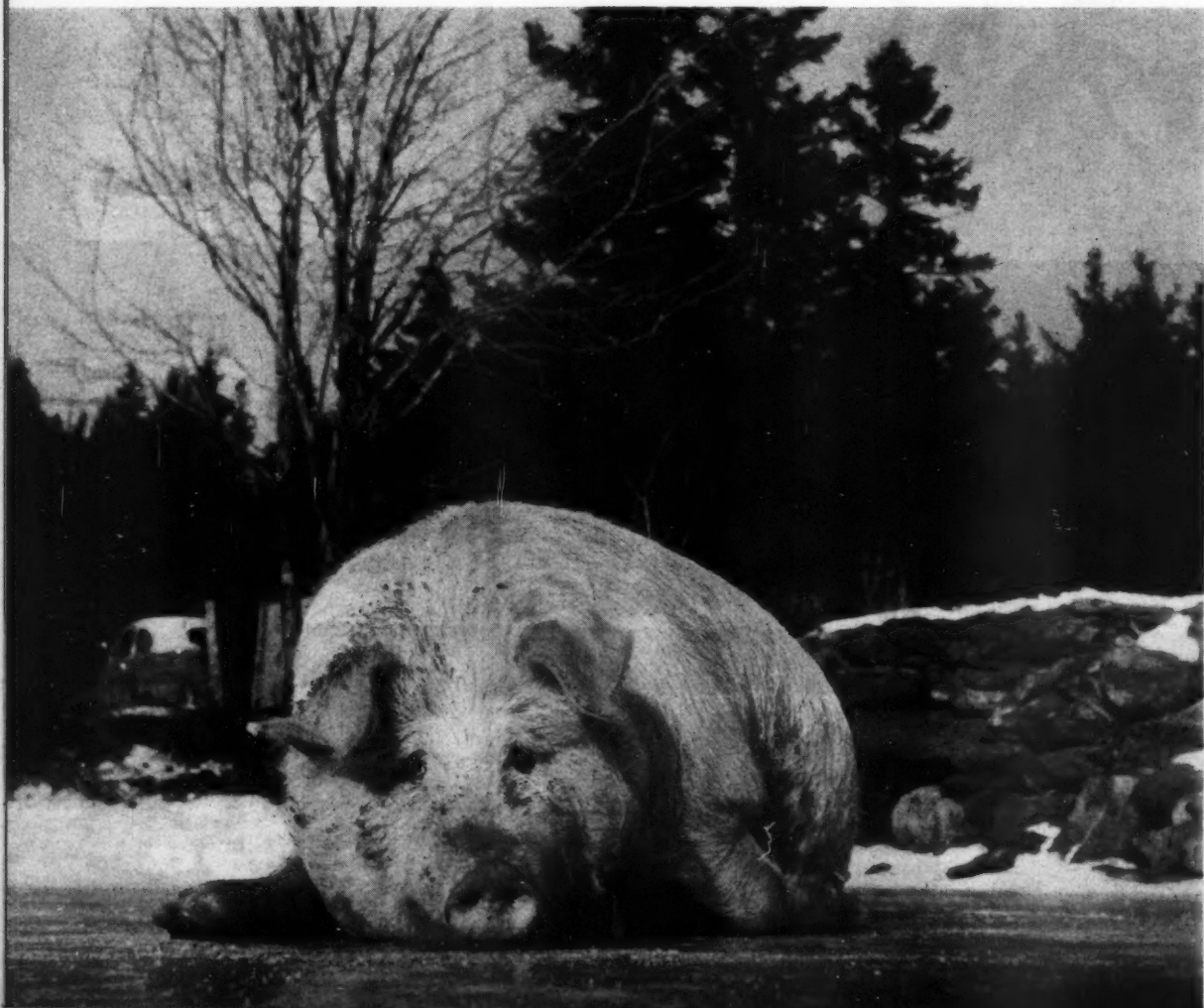


SHOOT WINTER (cont.)

◁ **ELIMINATE MIDDLE TONES** by copy technique and reduce the scene to silhouette. Here, Len Gittleman found a new approach to children and snow by applying a different technique. The original photographs were taken one cloudy mid-day on Eastman Kodak Tri-X Pan rated at E.I. 1600 and developed for 16 minutes in D-76. The high rating (Tri-X Pan is usually rated at about E.I. 400) produced negatives which were underexposed; but the long development (according to the manufacturer normal development for Tri-X is 8 min. in D-76) added density to the highlights. The next step was to contact print these negatives on Kodalith Ortho PB Type 3 film (actually designed for use by lithographers and in making line copies) to make high-contrast positives, which were re-contacted on the same film to produce the negatives which made these prints.

ANTICIPATE ACTION, then choose the best angle, when covering winter sports. While photographing test jumps for the Winter Olympics late one afternoon, Ernst Haas guessed probable airborne path of the jumpers, positioned himself beneath the jump to capture their soaring flight. Haas guessed at the exposure of 1/500 second and approximately f/11 on Plus-X Pan film. Leica M3 camera, 90mm f/4 Elmar lens.

TAKE THE TIME to set up humor. It takes only a second to snap a picture but it may take days to set one up. While working on an assignment for *Life* illustrating old New England phrases (here: "Independent as a hog on ice"), Kosti Ruohomaa traveled to Maine by train, then spent almost a day scurrying about the countryside to find a farmer with a suitable porker located near a pond. This done, his problems were over. The pig was pushed onto the pond, remained not much longer than the 1/100 second it took Ruohomaa to shoot. Rolleiflex, Super-XX film, f/11 with a light orange filter which had a filter factor of 3X. ▽





MONTHLY CONTEST

Send
Your
Best Shots
To MODERN.
Win \$25!

What to put in and what to leave out

THE BIG REASON that so many technically good pictures of sound subjects fail to impress is that the photographer has made a faulty selection, including either too much or too little. Put your hand over the boy in the picture *below*, or put both hands over the background faces in the picture *bottom, opposite page*, and you can see that the impact of each is greatly weakened. On the other hand, to see how too much can dull a picture, imagine the view of the Eiffel Tower, *left, opposite page*, taken from half a mile farther back—the result being a conventional picture postcard shot. Or imagine that the whole of the horse were shown in the picture *right, opposite page*—in which case, the visual relationship between it and the foal would be thrown completely out of balance.

You may enter any number of black-and-white prints in the "Monthly Contest." Pictures must be unmounted, 4 x 5 or larger. Polaroid prints may be original size. Your name, address and all technical data must appear on the back of each print. No entry blanks are needed. Unused photos will be returned *only if you enclose a stamped (first-class postage) addressed envelope*. Entries to Columns Editor, MODERN PHOTOGRAPHY, 33 W. 60 St., New York 23, N. Y.



FIGURE of running boy lends an air of mystery to this otherwise lonely landscape. Betty C. Brown, New York

City, used a Leica IIIa with 50mm Elmar lens, and exposed at 1/200 sec. and f/11 on Ansco Super Hypan.



DESIGN of the base of the Eiffel Tower and its reflection (*above left*) forms an unexpected circle. Jean Beauchesne, Paris, France, used a Semflex twin-lens reflex with 75mm f/3.5 Berthiot lenses, exposed at f/11 and 1/100 sec. on Adox R-14.

△ **CROPPING** emphasizes the contrast—and similarity—between the horses' heads, old and young. Stephen Perrin, Ames, Iowa, use a Leica IIIf with 50mm f/2 Summicron lens, exposed at f/2, 1/25 sec.; Tri-X Pan.

◁ **GROUPING** of boys' faces, made even tighter by framing and light reflections, gives a vivid impression of youthful curiosity. George Jacobs, New York City, used a Hasselblad with 80mm f/2.8 Tessar, exposed at f/5.6, 1/100 sec.; Verichrome Pan.

MORE THAN YOU SEE WITH 35MM ROYAL-X PAN

BY EDWARD MEYERS

THE FASTEST available 35mm film is Kodak Royal-X Pan, but practically nobody save MODERN PHOTOGRAPHY (and now you) knows it exists. It's sold under the name of 35mm Royal-X Recording film. It's available in 100-ft. bulk length only and Kodak reports that it is on the shelves of some camera stores. However, if yours doesn't have any, it can be ordered for you—list price is about \$11.

The photograph *at right* was taken by Maynard Frank Wolfe on Kodak 35mm Royal-X Pan with a Leica M3 and 90mm f/2 Summicron lens using only the light from a single candle (included in the photograph). The illumination was so low that the light reflected from a gray card hardly moved the Weston IV meter needle off its zero position. Although an exposure index of 2600 could actually have been used and the resulting picture would have been considered more than acceptable by even the most careful existing-light photographer, Wolfe rated the Royal-X Pan at E.I. 1300, and more shadow detail was recorded than the eye could actually see!

In order to see what Royal-X Pan could do, we directed photographer Wolfe to make carefully controlled exposure tests with high-contrast and flat-lighted subjects. The three fastest films available; Kodak 35mm Royal-X Pan Recording film, Agfa Isopan Record, and Ilford HPS (all processed according to manufacturer's recommendations) revealed the following: 35mm Royal-X Pan is undoubtedly the fastest of the three. It's about one stop faster (twice the speed) than Isopan Record. Isopan Record in turn proved to be about one-half stop faster than HPS. However, speed was, in our opinion, of importance primarily in relation to what additional quality could be produced in the pictures made with the film. For any (*Continued on page 114*)



How do Royal-X Pan, Isopan Record compare? Turn page.



**KODAK ROYAL-X PAN IS THE WORLD'S
FASTEST PRACTICAL 35MM FILM.
BUT THERE'S MORE TO THIS STORY.**

ROYAL-X PAN: At E.I. 2600 produced what many consider properly exposed negative for high-contrast available light. Exposure was determined with Weston IV meter by reading from gray card placed in front of subject. Light caused meter needle to move just off zero to position Weston claims is indication of about .05 candles per square foot. When light is this low, it's advisable to make reading from white card, then increase indicated exposure about 4X. But why limit yourself to these results? Increasing exposure one f-number (equivalent of using E.I. 1300) improved shadow detail, overall quality. Processed in DK-50, 6 min. at 68F.

KODAK ROYAL-X PAN



f/2 at 1/2

f/2 at 1/4

f/2 at 1/8

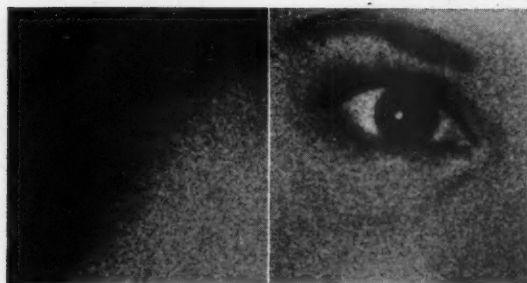
AGFA ISOPAN RECORD



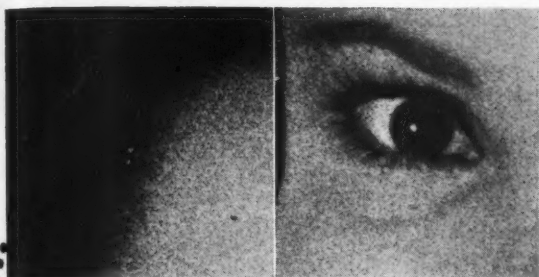
f/2 at 1/2

f/2 at 1/4

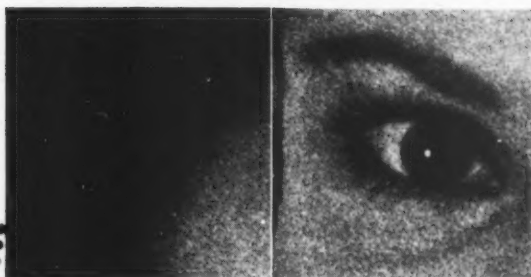
f/2 at 1/8



As you like it: Using E.I. 650 produced image with adequate highlight detail, some shadow detail.



As you like it: Using E.I. 1300 produced image with adequate highlight detail, some shadow detail.



As you see it: Using E.I. 2600 produced image with adequate highlight detail, but lacking shadow detail.



f/2 at 1/15

f/2 at 1/30

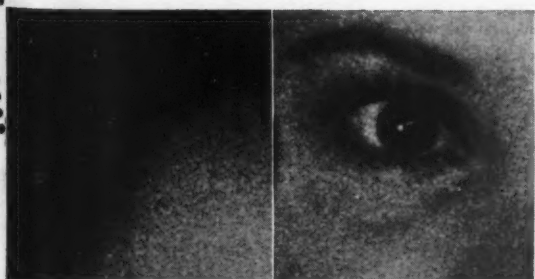
f/2 at 1/60



f/2 at 1/15

f/2 at 1/30

f/2 at 1/60



As you see it: Using E.I. 1300 produced image with adequate highlight detail, but lacking in shadow detail.

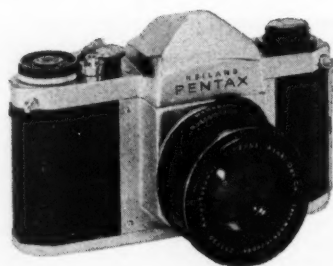
AGFA ISOPAN RECORD: At E.I. 1300 produced here what many consider a properly exposed negative for high-contrast available light. Exposure was determined exactly as described in caption top of left-hand page (same light level was noted). As with 35mm Royal-X Pan, Isopan Record produced increased shadow detail and improved overall quality when exposure was increased one f-number (equivalent of using E.I. 650). Film was processed in Rodinal dil. 1:50 for 18 min. at 68F. Of the two, only Agfa Isopan Record is available in standard 35mm cassettes. Kodak 35mm Royal-X Pan Recording film is available only in 100-ft. bulk.

MODERN TESTS

NEWEST CAMERAS • LATEST FILMS • IMPORTANT ACCESSORIES

MODERN PHOTOGRAPHY'S exclusive monthly equipment report section devoted to informative, unbiased field tests of equipment submitted to and passed as acceptable by our technical department.

PENTAX H3: A QUICKER, MORE AUTOMATIC WINK



Manufacturer's specifications: Heiland Pentax H3 35mm single-lens reflex camera. **Lens:** 55mm f/1.8 Auto-Takumar, with half stops to f/16, focusing to 17 in. **Shutter:** Focal-plane with speeds from 1 to 1/1000 sec. plus B, FPX sync. **Viewing:** Permanent eye-level prism reflex with Fresnel screen, central microprism. **Other features:** Completely automatic diaphragm; instant-return mirror; rapid-return diaphragm; depth-of-field preview lever; film wind signal; rapid wind, rewind levers; interchangeable screw lens mount. **Price:** \$199.50 without case. **Importer:** Heiland Photo Products, 5200 E. Evans Avenue, Denver 22, Colorado.

The Pentax H3 has a completely automatic diaphragm which reopens

immediately after exposure, a novel central microprism designed to make precise focusing easier, and a top speed of 1/1000 sec.

These are the three major changes—the only changes, as a matter of fact, to differentiate the H3 camera body from the H2 model (which had a semi-automatic diaphragm requiring manual cocking, a 1/500-sec. top speed and a diagonal-line central focusing grid). The camera bodies of the H2 and H3, aside from these changes, are precisely alike in size, shape, features and handling. It's a basic body minus such frills as self-setting frame counter, self timer or geared rapid wind lever. It does feature one of the best shaped and smoothest single-stroke rapid wind levers, a single non-rotating, highly legible shutter-speed dial, smooth top shutter release threaded for a cable and an extremely easy-to-load film spool which winds the film, Leica style, inside out. The body is known for its ruggedness, reliability and ease of repair, if and when it needs it.

Back to the innovations. On the H2 Pentax, a collar inside the camera body moves forward when the shutter release is tripped. The collar pushes in a small pin on the back of the lens. The diaphragm snaps shut to the predetermined aperture and remains shut until reopened manually with the re-cocking lever. On the Pentax H3, the internal collar (similar to but larger than that on the H2) moves forward, closing down the lens, but moves back immediately after the shutter closes. The lens reopens immediately to full aperture. The mechanism is simple and efficient. A half-moon shaped preview lever on the right side of the lens mount allows you to close down the lens to the shooting aperture for a depth-of-field check.

All the semi-automatic lenses for the H2 will work on the H3. The H3 fully

automatic lenses will fit the H2 and will even work automatically with some small adjustment by a repairman.

Although the 55mm f/1.8 Takumar had been tested by us some time ago on the now discontinued Asahi Pentax K model, we reran the test on the present production and found good sharpness at f/1.8 with slight corner fall-off. When the lens was stopped down to f/4, sharpness was excellent with almost no corner fall-off. Overall sharpness remained the same at smaller apertures.

Inevitably the f/1.8 Takumar will be compared with the f/2 Takumar on the Pentax H2. Obviously the small differential in speed is relatively unimportant. In terms of lens quality, however, the f/1.8 Takumar proved to be a slightly superior lens.

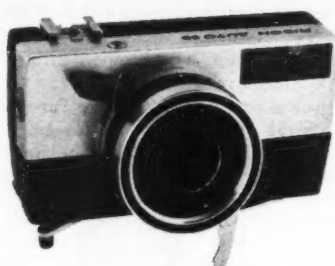
No other completely automatic lenses save the normal focal-length Takumar were available for testing, but a whole raft of focal lengths will inevitably appear. Of course any of the preset or semi-automatic Takumars for older Pentax models can be used on the H3. Incidentally since the Pentax uses the Pentacon, Edixa thread mount, it will be interesting to see if the soon-to-be-available fully automatic lenses for the Edixa camera will operate on the Pentax.

The new focusing grid, in the opinion of this reviewer, marks a major breakthrough toward improving the focusing of single-lens reflex cameras. The Pentax designers have shunned the central split-image rangefinder concept used by other makers, in favor of this grid which causes immediate breakup of the image when it is not in focus. In fact, two broken-up images resembling a rough, enlarged pattern of a newspaper photograph are seen. When the image is sharp, the screen snaps into a brilliant, clearly defined single image. I must admit however that my personal enthusiasm for the new screen was not shared by all. New converts to the eye-level reflex who formerly used rangefinder cameras still preferred the central split-image rangefinder over the Pentax viewing system. Obviously, you'd better try it yourself and make up your own mind.

The overall prism picture area uses the traditional Pentax combination of a large focusing screen of acceptable brightness (1:1 image size) with a Fresnel lens which helps furnish even illumination right to the corners. Some eyeglass wearers may have trouble seeing the extreme edges of the picture area.

The controls, shutter, automatic diaphragm worked with the customary Pentax efficiency—H.K.

THE RICOH AUTO 35: A SNAP FOR SNAPS



Manufacturer's specifications: Ricoh Auto 35 non-rangefinder electric eye 35mm camera. **Lens:** Fixed-focus 40mm f/4 Riken. **Shutter:** Leaf-type with speeds from 1/25 to 1/160 sec., plus B, M sync. **Viewing:** Bright frame finder with parallax correction marks. **Other features:** Built-in exposure meter, coupled to lens and film speed controls, for fully automatic exposure setting with E. I. 10 to approx. 200; trigger-fitted rapid wind lever on bottom, left; rapid rewind lever; auto zero reset frame counter. **Price:** \$49.50. **Importer:** Allied Impex Corp., 300 Park Ave. S., New York 10, N. Y.

In the race to combine automatic operation with a low price, the Ricoh Auto 35 is certainly one of the leaders. For automatic operation in daylight or available light, you need to make only one setting per roll—the film speed. This is calibrated in numbers from 2 through 6, and a chart on the camera back lists a selection of films corresponding to each setting, from Daylight Kodachrome (2) through High Speed Ektachrome and Tri-X (6). This list is limited, and does not include, for example, Panatomic-X or any Agfa films. If you want to use an unlisted film, you must compare its exposure index with those of the listed films and choose the nearest setting. Thus we used Panatomic-X at the 3 setting, with satisfactory results. The shutter speed remains the same for each film speed setting, e.g. 1/25 sec. for Kodachrome, 1/100 sec. for Plus-X Pan. The coupled exposure meter then sets the aperture. There is a low-light warning pointer visible in the viewfinder.

For shooting with M-type flashbulbs, there is a small lever on the lens mount that can be set at 8-, 12- or 25-ft. markings for the correct aperture at those distances. These settings—the equivalents of 1/20, f/12 and f/4—can also be used in conjunction with the film speed settings for a limited range of manual exposure settings.

We found the Ricoh Auto 35 compact and extremely light. Its left-

handed advance lever, which you squeeze toward you, is easy to operate (though right-eyed viewers may have to remove their eye from the finder), and so is the paddle-like shutter release, which projects from the side of the lens mount.

In our field tests, we found that the automatic exposure setting system produced well-exposed color transparencies in a variety of lighting situations. To test the fixed-focus lens, we had 11 x 14 enlargements made of some black-and-white negatives taken with the Auto 35. Results were very good for a camera of this class.—W.H.J.

1/1000-SEC. SPEED ON SEMI-AUTO LYNX



Manufacturer's specifications: Yashica Lynx 35mm rangefinder camera. **Lens:** 45mm f/1.8 Yashinon with stops to f/22, focusing to 2.6 ft. **Shutter:** Copal-SV with speeds from 1 to 1/1000 sec., plus B, MX sync, self timer. **Viewing:** Bright-line framefinder with coupled rangefinder, automatic parallax correction. **Other features:** Built-in exposure meter, coupled to lens and shutter controls, for E.I. 10 to 800; exposure setting by matched pointers, in window on camera top and in viewfinder; rapid wind, rewind levers. **Price:** \$89.95, case \$12.50. **Importer:** Yashica Inc., 234 Fifth Ave., New York 1, N. Y.

The Lynx is designed for the photographer who wants a semi-automatic camera with no limitations in exposure and focus settings. It offers a very full range of apertures and shutter speeds (see above), and it focuses as close as 2.6 ft. with a less-than-90° turn of the ring.

The pointer in the viewfinder, which is to be lined up across a circle, allows fast and accurate exposure setting. The cross-coupling is of the type in which the aperture ring rotates when the shutter-speed ring is rotated, but the shutter speed remains fixed when the aperture ring is rotated. We found it easy to select our shutter speed and then adjust the aperture with our eye

to the finder. Our field tests of the camera produced consistently well-exposed color transparencies in a variety of lighting conditions. The built-in exposure meter gave accurate readings down to a light level requiring f/4 at 1/60 sec. with E.I. 400.

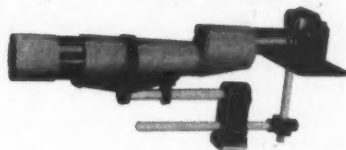
The film speed, incidentally, is set by moving a small lever fitted into the aperture ring. We did wonder whether the lever could be displaced during aperture setting, but this did not happen in our field tests.

The bright frame in the viewfinder is clear and could be seen in its entirety by this glasses-wearer. The rangefinder image is adequately bright.

In testing the lens we found good sharpness at f/1.8 with some sharpness fall-off at the edges. At f/4 sharpness was very good with some fall-off at the corners. Overall sharpness decreased slightly at smaller apertures.—W.H.J.

THE SPACEMASTER: A SUPER TELEPHOTO

Manufacturer's specifications: Bushnell Spacemaster Telephoto Unit. **Focal-length range:** 750 to 3000mm (depending on eyepiece). **Apertures:** f/12.7 to f/50 (depending on focal length). **Weight:** Approx. 2 lb. **Length:** 16 in. **Other features:** Focusing knob and built-in collapsing lens shade. **Price:** \$114.50 with reflex adapter. **Importer:** D. P. Bushnell & Co., Inc., Bushnell Building, Pasadena, Calif.



The Bushnell Spacemaster is in a class by itself. There is no regular lens that can equal it, allowing you a choice of focal lengths ranging from 750mm to 3000mm. Even those few photographic lenses around the 1000mm focal length are heavy, bulky and more than five times the cost of the Spacemaster.

Actually, the Spacemaster is a 16-inch-long spotting telescope—the type often used on target ranges and for bird watching—which has been converted to photographic use.

It can be used as a complete lens on 35mm reflex cameras or as an auxiliary lens with 35mm and 2 1/4 reflex cameras having permanently mounted lenses.

With 35mm interchangeable lens
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reflex cameras, the various focal lengths can be obtained by using 15X, 20X, 25X eyepieces and a reflex adapter—actually a telescoping extension tube. One end of the tube fits over the telescope eyepiece and the other threads into the camera mount. Aperture depends on focal length. At 750mm the single aperture is f/12.7. At 3000mm the aperture is f/50.

A set of four exposure control rings is supplied as an accessory which successively reduces the lens opening one f-number.

For picture taking, we found that the Bushnell Spacemaster attached to the camera on the special cradle must be mounted on a beefy tripod. Shooting with fast films—whether color or black-and-white—is a must, since the Bushnell's relative aperture is extremely small. Fast shutter speeds must be used to prevent camera shake.

Our first tests were made with the Spacemaster mounted on an Asahi Pentax and using the reflex adapter. To say the least, the results were startling. Once we started shooting at focal lengths greater than 1000mm we were obtaining images that are virtually impossible with any other piece of equipment.

The 11 x 14 prints we made from our negatives certainly were acceptable, although definition was not as sharp as those made from negatives shot with a regular photographic tele lens of normal construction. At 750mm (f/12.7) the central portion of the image appeared acceptably sharp. Acceptable prints were made by using only the central area of the negative. Exposure control rings progressively improved results but some fall-off was evident even with the No. 4 ring.

This fall-off with the Spacemaster alone became less as focal length increased. However, there was still some fall-off even at 3000mm. Also, pin-cushion distortion was evident.

With rangefinder 35mm cameras having permanently mounted lenses, from 45 to 58mm, the eyepiece in use determines focal length. For example, with the 15X eyepiece focal length is 750mm (f/12.7), with the 20X eyepiece, 1000mm (f/18), and with the 25X eyepiece, 1250mm (f/22).

In testing the Spacemaster on a Konica III with a Hexanon f/2 lens we found actual photographic results not quite as good as those achieved when using the Spacemaster without the

camera lens. Vignetting was evident with all eyepieces. However, we were able to make acceptable 11 x 14 prints by cropping the edges of the negative.

With 2 1/4 x 2 1/4 twin-lens reflex cameras having lenses from 75 to 85mm the focal length choice is: 15X eyepiece, 1200mm (f/22); 20X eyepiece, 1600mm (f/29); and 25X eyepiece, 2000mm (f/32).

Tests made with a Rolleiflex 3.5F proved better than with the 35mm Konica—mainly because of the larger negative size. However, vignetting showed up on every negative with all eyepieces. (Possibly it was caused by improper alignment of the Spacemaster with the Rollei lens.) Sharpness fall-off toward the edges with each of the exposure control rings of the negative proved quite serious. Also, pin-cushion distortion was evident with and without the rings. Some vignetting appeared when using the Spacemaster alone—and increased successively with the exposure control rings. Because of the large negative size, however, good prints could be made by using the central portion of the image.—M.A.M.

THE FUTURAMIC II: LIGHT AND BRIGHT

Manufacturer's specifications: Futuramic II Strobosonar dual transistor model 65A electronic flash unit.

Operation: 3 internal C size batteries, either photoflash type or rechargeable nickel-cadmium; 105-130 volts AC, 60 cps. **Recycling time:** 6 to 10 sec. **Flash duration:** 1/1500 sec. **Other features:** 40 watt-seconds capacity, 1200 BCPS (beam candle-power-seconds); 80 to 120 flashes (nickel-cad batteries); 50° reflector coverage angle; 5400K color temperature; exposure dial for aperture settings. **Price:** \$59.95; accessory Permacad recharger, \$9.95. **Importer:** Heiland Division, Minneapolis-Honeywell, 5200 E. Evans Ave, Denver 22, Colo.

The Futuramic II, a sleek and attractively finished unit with an easy-to-grip handle, weighs only 28 oz. when loaded with its three batteries, and measures 9 1/2 in. from top to bottom. Even without a bracket we could use it quite comfortably.

In our tests, we found that the recycling time with the nickel-cad batteries was about 6 sec.; with AC, about 5 sec. With the nickel-cad batteries fully charged, we obtained a total of 105 flashes.

One handy feature of the Futuramic II is the exposure dial on the back of the head. When a marker on the bottom of the dial is set against the



film speed (from E.I. 10 to 400), the correct lens aperture for any flash-to-subject distance from 3 to 50 ft. can be read from the top of the dial. Our exposure tests indicated that, with Kodachrome, the best results were obtained using a guide number of 25. We found it best to open up about one-half stop from the setting indicated by the exposure dial.

The 50° angle of coverage is ample for any but wide-angle lenses. All in all, we found the Futuramic II a most convenient and efficient unit.—W.H.J.

HERSHEY HI-PRO 75 ELECTRONIC FLASH



Manufacturer's specifications: Hershey Hi-Pro 75 portable studio-type electronic flash. **Operation:** 117-volt 60-cycle AC. **Recycling time:** 6 sec. **Flash duration:** 1/900 sec. **Other features:** 75 watt-second capacity; 1900 ECPS (effective candle-power-seconds); 2000 BCPS (beam candle-power-seconds); trigger tube circuit; combination sync and slave operation outlet; neon ready light; modeling light (50-watt projection lamp) which covers exact flash pattern, with on-

off switch; 6000K color temperature; 117-volt 60-cycle AC output socket; weighs 2 lb., is 8 in. long and 4 3/4 in. in diameter. Price: \$69.95. Manufacturer: Hershey Manufacturing Co., 853 Dundee Ave., Elgin, Ill.

Just at a time when most electronic flash manufacturers are making their units smaller and self-contained, the Hershey people (who incidentally made one of the first self-contained electronic flash units—see "Modern Tests," December 1958) seem to be directing their efforts toward the semi-professional class.

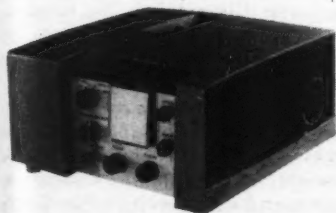
The Hi-Pro 75 is basically a small studio-type home portraiture unit. It may be used as a prime flash or as a slave with a photo tripper (\$6.95 extra).

In actual tests—mounted on a tripod, as a prime light source, or as a slave unit for multiple-flash portraiture—the Hi-Pro proved easy to handle and dependable. Its 1900 effective candle-power-seconds of light is approximately double the light produced by present-day small self-contained portable battery units equal in price. The "75" 's modeling light proved exceptionally useful. When positioning the light or lights (if you have two or more), if you switch on the modeling light you can see exactly where shadows will fall and observe exact light ratios which will be produced in the final photograph.

As the sole light source in normal living room conditions, this unit produced normally exposed Kodachromes with a guide number of 38.

Tests made on recycling times indicated that in about 6 seconds after discharge the unit was ready for another exposure. As for the number of flashes—this depends almost entirely upon your promptness in paying electrical bills, since the "75" runs on house current.—E.M.

BALOMATIC 655 TAKES ALL 2 x 2 SLIDES



Manufacturer's specifications: Bausch & Lomb Balomatic 655 2 x 2 slide projector. Lens: 5-in. f/3.5 Balcoted. Lamp: 500-watt Tru-focus. Operation: Automatic and semi-automatic. Other features:

Illuminated control panel; editing slot and preview screen; 4- to 30-sec. automatic slide interval timer; single knob for forward, reverse control; blower system for cooling, pre-popping and slide-holding; adjustable lens diaphragm; permanently stored power cord. Price, with one slide tray and carrying case: \$119.50. Manufacturer: Bausch & Lomb Optical Co., Rochester 2, N. Y.

With its clean, four-square lines and many new features, the Balomatic 655 bears only a family resemblance to its predecessor, the 500. (The resemblance is enough to be useful—the 655 accepts the same slide trays and accessory remote control cord as the 500.) It weighs 17 lbs., measures 5 1/2 x 10 1/2 x 10 1/2 in., and packs away neatly into a zippered carrying case.

As with the 500, the control panel of the 655 is on the right-hand side. But one striking new feature here is the ground-glass preview screen, which lights up when the projector is set on "edit" and enables you to inspect a slide quickly and conveniently. Among other controls, there's a semi-automatic slide change button that works on what the manufacturers call the "dot-dash" system. If you depress the button briefly ("dot"), the tray advances and the next slide is projected; if you depress the button for a slightly longer time—about half a second ("dash")—the tray reverses and the previous slide is projected. (If you hold the button down longer still, the slides will go on flipping backwards—but it's easy to hit the right reverse "dash" every time.)

There's a shield that automatically blanks out the screen during slide changes and also at the end of the tray. (It doesn't operate for an empty tray slot—so if you're showing fewer than 40 slides, insert them so that the last one falls in slot No. 40.)

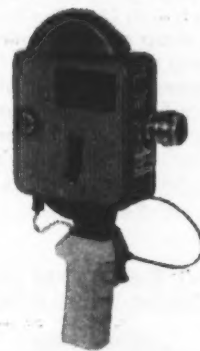
The Balomatic 655 will accept any 35mm or super slides in standard glass or cardboard mounts. During actual projection, the slides are held in place by forced air, which lessens the risk of damage or jamming. We crumpled a cardboard mount or two, but they passed through the projector smoothly. We did manage to jam a slide while editing, but released it by operating the dejamming device—a coin-turned knob that's located, a little inconveniently, on the underside of the projector. The pre-popping device worked every time.

The lens proved to give good overall brightness and sharpness. With Super Slides, there was a little fall-off

at the edges, but much less than with other projectors that we've tested. One new and useful feature is an external lens diaphragm, which allows continuous control over image brightness—and also enables you to increase depth of focus in the case of imperfectly flat slides.

Extra slide trays (holding 40 slides each) are available at \$1.25 per tray. An accessory 15-ft. remote control cord, priced at \$4.95, can be fitted to the Balomatic 655 for armchair slide-changing.—W.H.J.

ADMIRA 16 HAS ELECTRIC MOTOR DRIVE



Manufacturer's specifications: Admira 16A Electric 16mm movie camera. Lens: 20mm f/1.8 Opanar. Fps: 8, 16, 24, 32. Film capacity: 100-ft. roll. Motor: Electric. Viewfinder: Optical. Weight: Approximately 5 1/4 lbs. Other features: Interchangeable lens mount; rechargeable nickel-cadmium battery built into pistol grip handle; battery charger; battery warning light. Price: \$299.95. Importer: Tech Photo Products, 1945 MacDonald Ave., Brooklyn 23, New York.

A lightweight metal body casting and a plastic pistol grip holding the nickel-cadmium battery make the Admira 16A one of the lightest and fastest handling 16mm cameras we've used. The Admira has been pared to essentials. The finder provides only one field of view. The camera has no turret. The battery for the electric drive motor can be recharged by plugging the accessory charger into a regular 110-120 volt AC outlet.

The threaded lens mount is not standard. It's larger than the American C mounts, but Admira supplies an adapter with the camera for standard C mount lenses.

The viewfinder provides a bright image of 1:2 ratio with no parallax correction markings. However, it is
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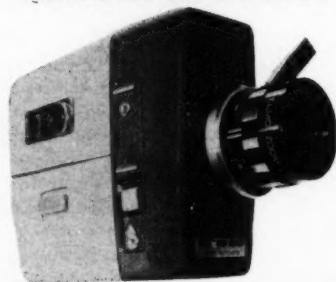
accurate for shooting as close as 4 ft.

To use the Admira 16A on a tripod, you unthread the handle from the camera body and tape it to the tripod so the connecting wires won't pull loose. It's somewhat clumsy.

Shooting tests showed the lens to be acceptably sharp at the center at maximum apertures. There was some slight fall-off at the outer edges of the frame. Sharpness improved at the corners at $f/4$. At $f/5.6$ the frame was definitely sharp over the entire area. Best opening appeared to be $f/8$.

The frames per second rate, with the battery fully charged, was accurate. We had only to recharge the battery overnight after a day's shooting to get the battery in shape for the next day.—M.A.M.

ELMO 8-S ZOOM HAS THROUGH-LENS FOCUS



Manufacturer's specifications: Elmo Zoom 8-S. Lens: 10 to 30mm $f/1.8$ Elmo. Viewfinder: Through-the-lens with beamsplitter in front of diaphragm. Focusing: From 5 ft. to infinity on ground-glass spot in finder. Fps: 12, 16, 24, 48, and single frame. Other features: Drop-in loading; automatic electric eye for E.I. 10 to 40; manual control; pistol grip. Price: \$149. Importer: The FR Corp., 951 Brook Avenue, New York 51, N. Y.

Quite enough has been built into the Elmo 8-S to satisfy many advanced amateur movie makers. At the same time, there's definite appeal to the casual shooters who have a taste for something better in the way of family record shots. The specs indicate the various refinements incorporated in the Elmo. But there's nothing to prevent a film maker from setting it at 16 fps, automatic exposure, and a focus setting of 20 ft. (universal focus), and

shooting as he would with any fixed-focus single-speed automatic electric eye camera.

Despite its rather squarish appearance, the Elmo is quite easy to handle. The pistol grip contributes to a fairly solid hold on the camera even during the zoom. Zoom action is controlled by two buttons on the grip itself. The linkage is through the camera body, rather than external. A cam system on the grip interlocks with a cam on the bottom of the camera. While you can shoot adequate footage with a hand-held camera, best results will still be with a tripod.

We found after several days of testing that the zoom lever on the camera provides a somewhat smoother zoom action than the pistol grip.

The through-the-lens viewing and focusing system provides a consistently bright image. Since the beamsplitter is placed in front of the lens diaphragm, image brightness is not affected by lens aperture. The automatic exposure meter can be used at all fps speeds. After setting the regular fps control, you set another fps dial opposite the appropriate exposure index. The automatic meter proved dependable when used according to standard meter practice. Footage where readings were taken correctly under a given set of conditions was well exposed.

Focusing on the ground-glass spot in the finder is quick and sure. However, we would prefer a full ground glass with a zoom lens camera. A spot can fool you into thinking some areas are in focus when they are not, since the image outside the focusing area always looks sharp.

Lens definition was a bit soft over the entire frame at maximum aperture. However, at $f/2.8$ sharpness improved considerably.

At $f/4$ the entire frame appeared acceptably sharp and at $f/5.6$ sharpness was good. The best opening was $f/8$, and there was no decrease in sharpness as the aperture was made smaller.—M.A.M.

PAN CINOR 40R—8MM R. F. ZOOM LENS

Manufacturer's specifications: Pan Cinor 40R $f/1.9$ zoom lens. Focal-length range: 8 to 40mm.

Focus: $3\frac{1}{2}$ ft. to infinity. **Other features:** Built-in through-the-lens viewing; split-image rangefinder; detachable viewfinder tube that can also be swiveled out of the way for loading. Price: \$240.00 with rangefinder, \$200.00 without. Importer: Paillard, Inc., 100 Sixth Ave., New York 13, N. Y.

The Pan Cinor 40R is one of the finest zoom lenses we have ever tested.

It is amazingly sharp for a zoom lens. In addition, its own through-the-lens viewing system provides a bright image that can be seen easily from corner to corner even by people who wear glasses.

Since the beamsplitter in the finder is set ahead of the diaphragm there is no loss of viewing brightness when the lens is closed down to minimum aperture. Also, the rather large rubber eyepiece blocks out all extraneous light and lets you concentrate on the image.

We found the built-in split-image rangefinder accurate at all distances, even at extreme close-up range. We shot close-ups from 6 in. (with supplementary lenses) to $3\frac{1}{2}$ ft. between camera and subject. In all cases the area focused on was sharp. The image is split diagonally, which makes it easy to focus on both vertical and horizontal subjects.

The zoom action works smoothly, with no apparent unevenness at the start or finish. The gearing makes it easy to regulate zoom speed, with just the right amount of resistance for good control. This is important for filming subjects requiring critical control—e.g., extreme close-ups.

If we have any argument with the mechanical aspects of the lens it's with the diaphragm control ring. With the Pan Cinor 40R mounted on a Bolex Compumatic it's mildly awkward to adjust the aperture.

But actual footage shot with the lens reveals its real worth. In some of our tests we compared the Pan Cinor with the Switar 13mm $f/1.5$. The latter is one of the top lenses supplied by the Paillard people for their Bolex 8mm cameras.

At maximum aperture the Pan Cinor appeared somewhat softer at the edges of the frame than the Switar. However, at $f/2.8$ it was difficult to distinguish film shot with the Pan Cinor and film shot with the Switar. At $f/3.5$ and smaller there was virtually no difference between films shot with the two lenses. Maximum sharpness with the Pan Cinor was attained at $f/5.6$, and there was no fall-off at smaller openings.—M.A.M.

SONORIZER ATTACHMENT FOR MAGNETIC SOUND

Manufacturer's specifications: Bolex 8mm Sonorizer magnetic sound-on-film attachment for Bolex M8 and other projectors. **Amplifier:** 4 watts. **Frequency response:** 70 to 7000 \pm 5 db. at 18 fps. **Speaker:** 5 x 7 in. **Other features:** Electronic eye recording level indicator, three inputs, two outputs, 118-frame sound head spacing, two volume-level controls, bass-treble control for playback, dynamic microphone with overlay feature. **Price:** \$250. **Importer:** Paillard, Inc., 100 Sixth Ave., New York 13, N. Y.



If you've already got a good, late model silent projector you may be hesitating about trading it in for a new magnetic sound-on-film machine.

The Bolex Sonorizer magnetic sound-on-film adapter is primarily intended for the Bolex M8 projector—but it can also be used with several other machines.

The projector feet fit into a base-plate on top of the Sonorizer amplifier. A metal arm extending from the amplifier housing supports the sound head in a position before the film gate. Film goes through the sound head before the appropriate image passes through the gate. Sound head spacing is 118 frames between head and gate. The extension speaker plugs into the amplifier. Special base-plates are available for Bell & Howell, Revere (Model 718 only), Eumig, and the more compact Keystone projectors.

It takes only a few minutes to set up the projector and Sonorizer for a recording or sound film projection. While it looked complicated at first, we found threading film through the sound head sprockets to be virtually foolproof.

To make a simple voice sound track the Sonorizer is first switched to record. Then, the correct sound level is determined—without starting projection. You speak into the mike and adjust the electronic eye—by rotating

the level control until the two separate light bands are only about 1mm apart. At that point recording should be clean and undistorted. Once the level has been set, you start the projector and record on the magnetic track.

Sound mixing—feeding two different sounds into the projector at the same time—is relatively easy with the Bolex. The microphone and tape inputs have their own level controls. If you want to record dialogue over a musical background you adjust the controls until the music is low enough to be heard without interfering with the speech.

Mixing can be done even more easily with the overlay feature on the mike. First, you make the music track. Then, you rethread the film and prepare to make the voice track right over the music. By pressing the button on the mike while you speak, the level of music is cut by 50 percent. At the end of the dialogue release the button and music returns to full volume. It's as professional a mixing job as you would like.

Since the Sonorizer has no provision for reverse, when making corrections on the M8 it is necessary to run film completely through the projector, rethread the reel, and run footage until the right point is reached. With projectors that have reverse, the film must be removed from the sound head before correcting.

In testing the Sonorizer we fed various sounds into the machine—music from a tape recorder, speech (with the mike) and special effects from records. In general, overall sound reproduction was excellent. In fact, the playback sounded better than results we've had with some low-priced tape recorders. Music, voice and effects were clean and virtually undistorted. Sound track and image stayed in sync for showing after showing.—M.A.M.

SEKONIC METER DESIGNED FOR MOVIES

Manufacturer's specifications: Sekonic reflected light type movie meter. **Features:** Exposure indexes from 10 to 40; hold button; direct reading for 16 fps shooting; zero adjustment. **Price:** \$6.95. **Importer:** Sekonic Inc., 130 W. 42 St., New York 36, N. Y.

If you shoot only 8mm movies, a regular exposure meter with a wide range of shutter-speed readings designed for still camera shooting is a bit superfluous and confusing. Most movie makers are interested in one speed—16 fps (1/30 to 1/40 sec.).

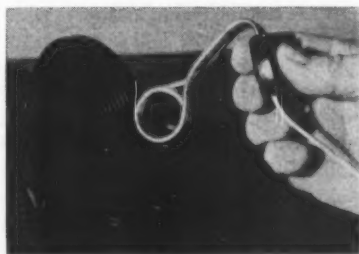
The small (2 x 1 1/4 x 5/8 in.) gray plastic Sekonic is about as unadorned as a meter can get. It provides readings for only 16 fps. However, you can add 1/2 stop more exposure than



provided for by the meter for every additional 8 frames you shoot over 16 fps. You turn a dial on the side to set the meter to the exposure index of your film. This also brings into view a series of f-numbers. Aim the meter, press a tiny pointer lock button, hold it and then let go. The pointer then remains at the proper f-number.

Actual shooting tests made using the Sekonic Movie Meter showed that it will handle any daylight reading situation and also provide readings indoors where the light level is high and fast film is being used. With the meter set at E.I. 40 we were able to obtain accurate readings as low as f/1.4. The Sekonic is definitely more sensitive than most built-in electric eye meters. Thus, it would be handy for those dubious situations where built-in meters should not be depended on for accurate readings.—M.A.M.

How to do it



The small immersion type liquid heater that has come on the market in the last year or so has proved to be one of the handiest gadgets ever seen in a darkroom. It will heat up a tank or tray of developer to the desired 68F in a matter of seconds, as against several messy minutes for such old methods as electric hot plates and hot water tubes. These heaters do such a quick job that it is advisable to keep stirring the liquid with a thermometer while heating, to keep a check on the rising temperature. Ten or fifteen seconds is usually enough for a roll film tank or 8 x 10 tray.—Herbert Y. Moon

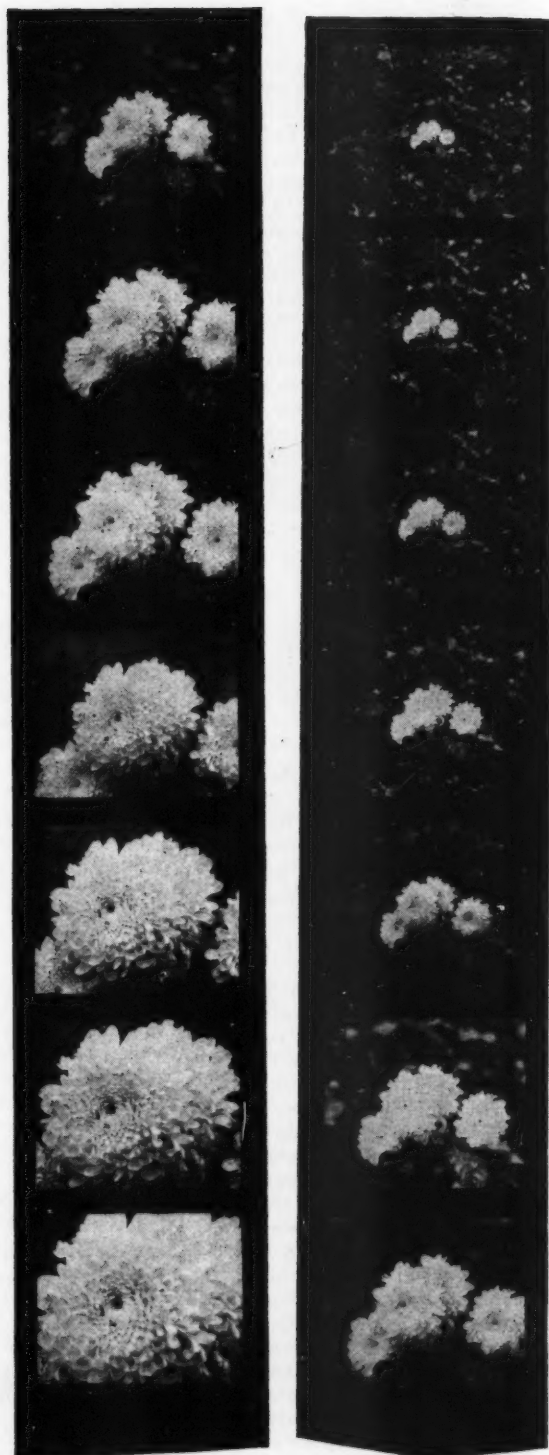
ULTRA CLOSE ZOOMS

ONE OF THE LEAST exciting shots in motion pictures used to be the extreme close-up of a fairly static object—a flower or drops of water, for example. Often, they could have been better photographed—and more inexpensively—with a still camera. Now, the new 8mm zoom lens cameras make this same extreme close-up one of the most exciting shots imaginable. Think of a shot that starts out showing a flower filling the frame. The lens starts to zoom down until only a tiny portion of the inner part of the flower fills the screen. The zoom has added movement and, more important, a feeling of unity to the sequence that might have been impossible with the usual technique of cutting from one shot to another.

However, only a few 8mm zoom lenses permit you to focus even as close as 3 or $3\frac{1}{2}$ ft. from a subject. Most have a minimum distance of 5 ft. So, to change the focusing distance, you'll need close-up lenses or special attachments. Special shooting techniques are also required—framing, fps speeds, tripods, exposure, and indoor and outdoor lighting.

Close-up attachments come in various strengths. These strengths are rated in diopters from +1 to +10—the greater the diopter number, the closer to the subject you can focus your zoom lens. The chart, *opposite page*, indicates what happens when you zoom with different close-up lenses. A +1 attachment will let you position your camera about 40 in. from the subject (all distances are calculated with the zoom lens set at infinity). A +3 lens permits moving in closer—covering an even smaller area. You may start, for example, with the zoom lens set at the 8mm focal length and a +3 close-up lens. This combination covers an area of $5\frac{1}{2} \times 7$ in. At the end of the zoom—perhaps 40mm on your lens—the lens fills the frame with a subject area of only $1\frac{1}{16} \times 1\frac{1}{2}$ in. The chart provides the terminal distances—minimum and maximum focal lengths—for most zoom lenses now on the market. By finding the fields you want to cover and knowing the minimum and maximum focal lengths of your zoom lens, you can determine which close-up lens you need. Close-up lenses may be combined—e.g., a +1 and +3 to make a +4.

If you have a through-the-lens reflex focusing camera with built-in split-image rangefinder or ground-glass screen, you focus for close-ups (*Continued on page 115*)



The sequence at the right represents a zoom lens sequence without close-up lenses. The sequence at the left shows what can be done with even a low-power close-up attachment. What might have been a close-up in an ordinary shot becomes virtually a long shot. The extreme close-up, left, reveals detail hidden in the ordinary zoom shot.

FOCUSING, FRAMING, LIGHTING, AND EXPOSURE TECHNIQUES FOR EXTREME CLOSE-UP ZOOMS



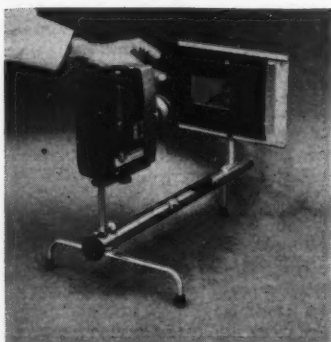
Close-up lenses come in various sizes to fit most 8mm zoom lens cameras. Konica also makes special wide-angle attachment for close-up shooting.



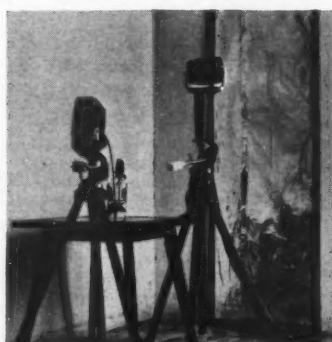
Cradle allows you to position camera correctly even though elevator tripod is inverted for subjects close to ground. Nut holds cradle to panhead.



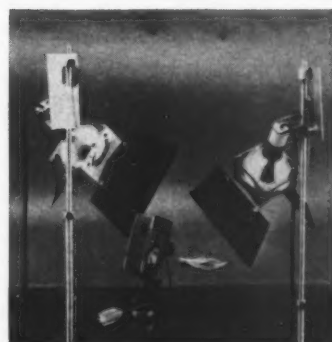
Gray card reading with reflected light meter helps determine exposure for small objects. Hold gray card between lens and subject (see text).



Focal frame cards match field of view with specific close-up lens. Using titler to line up camera helps correct parallax error.



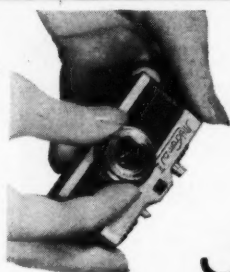
Bounce lighting, with barnlight, floods, or Sylvania Sun-Gun (shown), helps match light direction of other shots in movie.



Direct lighting can be used to get most light on subject. Here barn doors on Lowel Lights are adjusted to keep stray light out of lens.

FIELDS OF VIEW IN INCHES FOR CLOSE-UP LENSES WITH ZOOM LENSES FOCUSED AT INFINITY

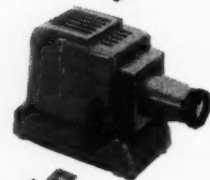
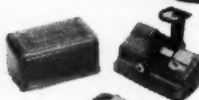
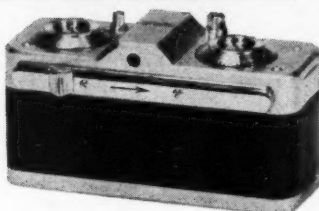
Dioptr of close-up lens	+1	+2	+3	+4	+5	+6	+7	+8	+9	+10
Subject-to-CU lens distance	30 1/2 in.	19 3/4 in.	13 in.	9 3/4 in.	8 in.	6 1/2 in.	5 1/2 in.	5 in.	4 1/2 in.	4 in.
Zoom focal length	8mm x 21	8 1/16 x 10 1/2	5 3/8 x 7	4 1/16 x 5 1/4	3 1/4 x 4 3/16	2 11/16 x 3 1/2	2 5/16 x 3	2 x 2 5/8	1 13/16 x 2 5/16	1 5/8 x 2 1/8
	9mm x 18 11/16	7 3/16 x 9 5/16	4 3/4 x 6 1/4	3 9/16 x 4 11/16	2 7/8 x 3 3/4	2 3/8 x 3 1/8	2 1/16 x 2 11/16	1 13/16 x 2 5/16	1 9/16 x 2 1/16	1 7/16 x 1 7/8
	10mm x 16 13/16	6 7/16 x 8 7/16	4 5/16 x 5 5/8	3 1/4 x 4 3/16	2 9/16 x 3 3/8	2 3/16 x 2 13/16	1 7/8 x 2 3/8	1 5/8 x 2 1/8	1 7/16 x 1 7/8	1 5/16 x 1 11/16
	11.5mm x 14 5/8	5 5/8 x 7 5/16	3 3/4 x 4 7/8	2 13/16 x 3 5/8	2 1/4 x 2 15/16	1 7/8 x 2 7/16	1 5/8 x 2 1/16	1 3/8 x 1 13/16	1 1/4 x 1 5/8	1 1/8 x 1 7/16
	24mm x 7	2 11/16 x 3 1/2	1 13/16 x 2 5/16	1 5/16 x 1 3/4	1 1/16 x 1 7/16	7/8 x 1 3/16	3/4 x 1	1 1/16 x 7/8	5/8 x 3/4	9/16 x 1 1/16
	27mm x 6 1/4	2 3/8 x 3 1/8	1 9/16 x 2 1/16	1 3/16 x 1 9/16	1 5/16 x 1 1/4	1 3/16 x 1 1/16	1 1/16 x 7/8	9/16 x 3/4	1/2 x 1 1/16	7/16 x 5/8
	30mm x 5 5/8	2 1/8 x 2 13/16	1 7/16 x 1 7/8	1 1/16 x 1 3/8	7/8 x 1 1/8	3/4 x 1 5/16	5/8 x 1 3/16	1/2 x 1 1/16	7/16 x 5/8	7/16 x 9/16
	40mm x 4 3/16	1 5/8 x 2 1/8	1 1/16 x 1 3/8	1 3/16 x 1 1/16	5/8 x 1 3/16	1/2 x 1 1/16	7/16 x 5/8	3/8 x 1/2	3/8 x 7/16	5/16 x 7/16



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- Great depth-of-field helps to conceal errors of distance estimation
- From correctly processed negatives exhibition prints may be made
- Colour slides can be projected to large sizes
- A wide range of accessories extend the usefulness of the camera
- Its many other advantages make the Mikroma II an ideal family camera

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Lens: 3 element 20mm MIRAR f3.5 to f16.
Shutter: speeds from 1/5 to 1/400 sec. & B.
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THE LARGE CAMERA

(Continued from page 62)

rapher, the first type has the advantage of taking considerably less space than most cameras of the second type (the Plaubel Peco is an exception).

Furthermore, some large cameras are made of metal and others of wood. Now, the metal cameras, although generally sturdier, are also considerably heavier than the wooden cameras. As a matter of fact, although I never put them on the scales, I doubt very much that the wooden 4 x 5-in. Deardorff view camera is heavier than the small-size 2 1/4 x 3 1/4-in. Peco, and I'm pretty sure it's lighter than the small-size all-metal Linhof 2 1/4 x 3 1/4-in. and takes no more space. So there is another possibility for saving on weight and bulk and still enjoying the advantages that come with large-camera photography.

Accessories. In this category, the heaviest and bulkiest items are cut film holders. However, two types are available here also: the all-metal holders which last a lifetime but are inordinately heavy, and the wood-and-aluminum or plastic holders which may not last as long but are considerably lighter and, in some instances, also thinner. I suggest you investigate this possibility for saving weight.

Film packs save space and time

For black-and-white photographs I have all but given up using cut film; instead, I use film packs. One film pack adapter holding 12 individual exposures takes about the same space as one cut film holder which, however, provides space for only two exposures. Besides, film pack offers the advantage that it can be loaded in daylight, eliminating the nuisance of unloading and reloading cut film holders at the day's end (usually in a hot and cramped closet in some motel) when all one can think of is a highball and rest. And to those who use color film I recommend the Grafmatic film magazines made by Graflex which take six sheets of color or black-and-white cut film, are available in 4 x 5 (\$26.95) and 2 1/4 x 3 1/4 (\$19.95) sizes, and take no more space than ordinary film pack adapters.

Further savings in weight and bulk can be made by fitting all your lenses with permanent adapters which will enable you to use the same size of filters on any one lens regardless of focal length and speed. Also, instead of using a different lens shade on different lenses, have the front of your camera fitted with the little shoe that makes it possible to use the collapsible bellows-type lens shade made by Graflex in conjunction with any one of your lenses, from wide-angle to telephoto. Besides saving weight and bulk (of several special lens shades) it is also, in my opinion, the only commercially available type of lens shade worth its salt. Since it can be extended or retracted as the occasion requires, it

(Continued on page 110)

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THE LARGE CAMERA

Continued from page 108

will enable you to shoot much more directly toward the light than any other type of lens shade without inviting the danger of halation and flare.

Another way to save on bulk is to use the right type of equipment case. Personally, I found that those elegant "fitted" cases are great wasters of space. Not only do all the different partitions take up a lot of space and thus make such cases bulkier than necessary, but usually one does not need every piece of equipment for which the case is fitted—and every unfilled hole is space wasted and needless bulk added. On the other hand, a "fitted" case that provides space for only the bare essentials will often be too small to hold that extra piece of equipment needed for a special job.

For this reason, I use cases that have only two or three widely spaced partitions (the dimensions of each compartment depending upon "standard measurements" derived from the dimensions of the camera, film holders, etc.). Such relatively large compartments can be filled with different pieces of equipment as the situation may require, each piece wrapped in one of those very practical plastic bags which effectively protect against dampness and dust and cushion against shock and abrasion even the most delicate pieces of equipment.—THE END

35MM

(Continued from page 58)

When rewinding film, the tongue must be disengaged from the take-up spool. I prefer the type of spool which automatically lets go, without pulling. It has been my experience that spools which hold the tongue tightly can be a cause of scratches or cinch marks on negatives, due to the pressure necessary to separate film and spool.

Back or bottom opening: I have cameras of both types and can load them with equal facility. However, I think that a hinged back offers distinct advantages, if it is well designed and of sturdy construction. The back-loading camera can be reloaded while on a tripod. This is most important if you are doing scientific or technical work involving precise setups and focus. For ordinary snapshooting it doesn't much matter.

Carrying strap lugs: Maybe we can interest the next U.N. General Assembly session in a resolution demanding lugs on all 35mm camera bodies.

Flash sync: A camera which can shoot flash or speedlight only at 1/30 sec. puts real limitations on your picture taking. Of course, if you always shoot only by existing light it doesn't matter much. But be sure you know just what the flash sync arrangements are before buying.

I shall now relax and wait for the dissenting opinions.—THE END

DISCOVERY

(Continued from page 82)

From his photographs we can see that this month's Discovery Steve Schapiro works fast with 35mm equipment; is technically competent and produces acceptable prints even though shooting in contrasty, difficult-to-meter available light situations; and, most important in accounting for the unusual quality of his photographs, that he is unobtrusive and not aggressive when shooting. His compositions are not tense or calculated; his subjects are not posed or directed. They do not, in fact, even seem aware of Schapiro's presence.

In 1956 Schapiro graduated from Bard College, where he majored in literature and spent much of his time writing journalistic stories and fiction. Shortly thereafter he left for Paris, where he worked on a novel, for six months. Early in 1956, he returned to New York.

This was the point at which Schapiro began to photograph seriously. His long-time amateur interest in taking pictures was sparked by the *Family of Man* exhibit: "It brought home to me the fact that photography could express the same human situation which I had been writing about. This show, and the discovery of the 35mm camera, turned me both seriously and professionally to photography."

While working intensively on his own picture taking Schapiro also took freelance jobs as studio and darkroom assistant to a number of fashion and commercial photographers. He has taken

IN NEXT MONTH'S MODERN

A roundup of techniques for shooting birds on the wing.

part in a show at the Image gallery in New York, and in addition to completing a number of editorial and advertising assignments, has worked on picture stories on a school for delinquent boys, a baptism in Haiti, a mime-clown, and has produced and photographed a film strip on narcotics addiction. Like most photographers whose interest is primarily social and journalistic, Schapiro is interested more in taking stories—or sets of pictures which work together—than in shooting single pictures, meant to be viewed alone. His working techniques are simple. He uses Nikon S2 and S3 cameras, with 35mm f/1.8, 50mm f/1.4 and 105mm f/2.5 Nikkor lenses; and one Heiland Pentax with 55mm f/2.2 Takumar. He shoots Plus-X at 160 and Super Hypan at 500, develops both by inspection in D-76.—P.C.

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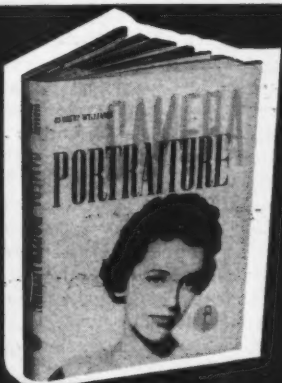
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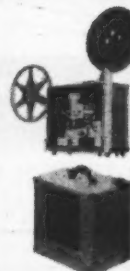
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PICTURES AFTER DARK

(Continued from page 74)

ness range and contrast of the subject. Satow points out that the brightness range of the normal subject is about 100 to 1; that is, the bright parts of the scene reflect about 100 times as much light as the dark areas.

"A contrasty scene is liable to have a ratio of 500 to 1," and this is what you're bound to run into for night shooting. Satow advocates the technique of taking readings on the extremes—both highlights and shadows. He indicated that you then have two choices—either use a compromise reading, if possible, or expose for the area in which you want the most detail.

Correct film choice and good exposure techniques must be combined with the best developing combination for optimum results. With Satow, of course, long experience has made the choice of the right developer, to meet a particular problem posed by a specific exposure situation, virtually automatic. But what about the photographer who doesn't have such experience? Is developing necessarily a matter of trial and error? The knowledge required to use modern developers intelligently is readily available—in Satow's book, for example—and makes the difference between success and failure.

Satow is definitely not of the one-film-one-developer school of thinking, which he finds much too restrictive. "Ideally a developer must be designed to get the last ounce of speed out of a film while still producing the best possible gradation, grain, and definition. Some developers are better than others in specific areas." For example, in his opinion UFG and D-76 are great for definition but are both a bit weaker than Microphen and D-23 in securing soft contrast and gradation. For speed without "butchering" highlights, Microphen is best, according to Satow.

How Satow develops

"Mild, slow-working developers are best because they allow gradual build-up of shadows while preventing abrupt highlight blocking." He cites the new Microdol-X as this type of developer for fast films. For slow films he likes Perutz Perinal and Tetenal Neofin Blue.

What about actual developing procedures? Satow has some pretty definite ideas on time-temperature as against inspection developing.

"Since there is a definite relation between time and chemical reaction that can be predicted with a great deal of accuracy, I prefer developing in a closed tank. But time and temperature developing requires an accurate thermometer. Here's one place that it's unwise to

save a few dollars. I've seen discrepancies of 2 to 4° in some thermometers.

"One of the more important factors in good development is proper agitation. It should be on a precise schedule—starting out with 30 sec. and then for 10 sec. every minute.

"Inspection developing is an emergency measure of negatives you aren't sure about. I have my own techniques for inspection processing. When I go into the darkroom I switch on an amber safelight—such as Kodak Wratten OC used for print-making. All preparations for developing—arranging films, tanks, and so on—are done under this light. I then turn off the light, load tanks, start developing, then turn on the safelight again.

"When I'm ready to inspect at the half or two-thirds point in development, I turn off the printing safelight and turn on a dark green inspection light—a Kodak Wratten Series 3. My eyes become accustomed to seeing in the dark green light fairly rapidly.

"I then take the reels out of the cans and inspect the unwound film at about 4 ft. from the safelight. I look under the light rather than through the negative at the light. If development is going correctly, the highlights will look black."

A strong safelight

And now, we asked Satow, what about the final print?

He started out by saying, "I've got one really important fixation about darkrooms. There usually isn't enough light. I make it a practice to have just about as strong a safelight as possible without fogging my most sensitive paper. You've got to be able to see what you're doing to make a good print. Also, I have a white light right over the fixing tray so that I can look at a print without damaging paper in the darkroom."

Knowing that Satow favors the thin negative, we asked him whether this type wasn't more difficult to print.

"Not at all," he answered. "The thin negative prints best on No. 3 paper. This should be the normal paper for night shooting. I also make it a practice to dilute stock paper developer at a ratio of 1 to 1, not 1 to 2. The 1 to 1 gives strong blue-blacks and good contrast."

Satow's night shooting world isn't all black-and-white. He finds the fast color films—Super Anscochrome and High Speed Ektachrome—most exciting. They offer tremendous latitude, in his opinion, and can be shot at much greater than normal exposure indexes if necessary.

"You can inflate the exposure index for High Speed Ektachrome up to 640," he claims. "Many color labs will follow your request to process according to the boost in the exposure rating. However, it's a good idea to check with the lab

(Continued on page 114)

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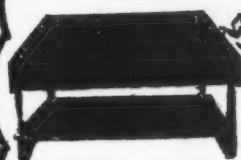
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PICTURES AFTER DARK

(Continued from page 112)

before taking important photographs."

Satow doesn't find color shifts caused by increased exposure indexes to be objectionable. "Are the color characteristics of a subject always important?" he asked. "Sometimes they really aren't at all. If the color looks good to you, it's perfectly valid."

Satow feels that the medium speed color films are useful at night. "Anscochrome and Ektachrome offer a latitude of one stop in either direction." He also is an advocate of using the slow color films such as Kodachrome. He feels that Kodachrome provides some of the most startling photographic results for store fronts, fireworks, amusement parks and the like. Naturally, because of its slow speed, a tripod is mandatory for many night shots with Kodachrome.

Whether talking to Satow or reading his book you come away with the feeling that successful night photography requires two things—a good working knowledge of materials and a careful application of methods.—M.A.M.

ROYAL-X PAN

(Continued from page 96)

given lighting situation, what quality do we hope to get from a "correct" exposure index? There have been two concepts:

(1) Low-light zealots have always insisted that high-speed films could be rated at astronomical exposure indexes. And the resulting negative and print were acceptable if a recognizable image was produced. This type of photograph was made with Royal-X Pan at f/2 and 1/60 sec., on page 99. Here an image was recorded using the equivalent of approximately E.I. 5000. An 11 x 14 glossy enlargement made from this negative (not shown) was grainy and lacking shadow detail. Although this might satisfy our low-light zealot, no one could truthfully say that the quality of the print was pleasing.

(2) A more moderate and ideal concept is that the exposure index and proper exposure should be capable of reproducing just as much shadow detail as the photographer actually sees.

The photographs (top and bottom on pages 98 and 99) made rating Royal-X Pan at E.I. 2600 and Isopan Record at E.I. 1300 were, according to Wolfe, similar in appearance to the original scene. For all practical purposes these exposure indexes might be considered normal.

(3) However, we discovered that the fast films, particularly Royal-X Pan, allow an entirely new possible concept

of "ideal" exposure index and resulting exposure. Why limit the shadow detail to what your eye can see if it's possible to get more detail?

Upon close examination of the photographs made at the equivalent of half these exposure indexes (Royal-X Pan at E.I. 1300, Isopan Record at E.I. 650)—see photos top and bottom, pages 98 and 99—we discovered that shadow detail not even seen by Wolfe had emerged from the darkness. As the exposure index was again halved, out came more shadow detail. Amazingly, 11 x 14 enlargements indicated that graininess did not increase to any marked degree for these exposure increases. But the overall quality of the photographs actually did improve.

However, just how low should you rate a fast film before you begin to lose its primary advantage—speed? Although you may gain fantastic shadow detail, it seems ridiculous to use a film such as Royal-X Pan or Isopan Record with such a low exposure index as 320. We feel that the line should be drawn at E.I. 1300 with Royal-X Pan and E.I. 650 with Isopan Record. Here we achieved more detail than could be seen, yet not enough to change the high-contrast effect of the original scene.

The photograph on page 97 made from 35mm Royal-X Pan exposed at E.I. 1300 was reproduced from a glossy 14 x 17 enlargement representing a magnification of about 14X. The graininess in this 14 x 17 glossy photograph when viewed up close is perhaps not as pleasing as you'd like. However, it's far better than you'd expect to get from the fastest of all 35mm films.

How do the sharpness and graininess of Kodak Royal-X Pan and Isopan Record compare? As far as the tests made by photographer Wolfe indicate, 11 x 14 enlargements made from comparable negatives of both Royal-X Pan and Isopan Record showed that from extreme under- to extreme overexposure there is no appreciable difference in sharpness or graininess when each film is processed exactly to its manufacturer's recommendations (see captions, pages 98 and 99). Oddly enough, these results do not tally with our tests of roll film Royal-X Pan and Isopan Record (see page 72 of the October 1960 issue of MODERN), which, briefly, showed that in overexposure Royal-X Pan film was not so sharp as Isopan Record Roll film.

For some unexplainable reason, the existence of 35mm Royal-X Pan Recording film is unknown to most photographers. One lab technician felt the film was too grainy for practical purposes. And even Kodak does not wish to recommend it. Although we do not like to disagree with such a large company, MODERN feels that 35mm Royal-X Pan's usefulness is obvious.—THE END

ULTRA CLOSE ZOOMS

(Continued from page 106)

in exactly the same way as with normal subjects. While the focusing distances used in the chart apply when the lens is set at infinity you can use them to get an approximate camera-to-subject distance and then make fine adjustments away from the infinity markings.

The focusing distances in the chart can also be used with cameras that have separate, non-focusing viewfinders—but they must be used precisely. Make sure the lens is set at infinity. Also determine from the manufacturer if focusing distances for your camera should be measured from the film plane of the camera or the front of the close-up attachment. Incidentally, do not use stronger than a +3 close-up lens with a camera that does not have through-the-lens focusing. Depth of field with the stronger close-up lenses is extremely shallow.

With through-the-lens focusing or viewing cameras, framing presents no problem. However, you must correct for parallax error with cameras having separate viewfinders.

A titler is one of the most effective devices for eliminating parallax error. First determine the maximum and minimum fields of view for your zoom shot from the chart. On two pieces of cardboard whose outside dimensions are the same as the titler easel, draw the areas to be covered—centering them exactly. Cut the areas out to make a focal frame.

Now, line up your camera with the center of the easel according to manufacturer's instructions. The distance between the camera and easel should be the same as required for the close-up lens. Mount the titler and camera on a tripod or place it on a flat support such as a table, if the shot permits. Place the card showing the minimum field of view in the titler frame as in the photo page 107. Center the card around the subject. Remove the card and substitute the one showing the maximum field of view. Make sure there isn't too much background or surrounding area to distract from the effect you want and then remove the card. Your shot should be properly framed and focused.

The elevator tripod is probably one of the best tripods for close-up shooting (and you must use one for best results since the slightest camera movement is magnified many times on the screen with close-up lenses). By removing the column from its regular position in the tripod collar and inserting it upside-down, you can position your camera more easily in relation to subjects close to the ground. However, you'll need a cradle to allow positioning the camera right-side-up. The cradle shown on page 107 was made from a pair of metal right-

angle brackets joined by two sets of nuts and bolts. You may have to drill extra holes for the bolts in order to fit and secure your camera to the cradle. The lower end of the bracket holds the camera. A tripod socket screw secures the camera. The upper end is drilled so as to slip over the regular tripod thread of the panhead, and is secured with a small nut. The unit allows use of the panhead.

Shooting extreme close-ups outdoors often presents one truly major problem—wind. If there's a fairly brisk wind blowing and you shoot at normal fps speeds (16 or 18 fps for silent footage, 24 fps for sound) the image will appear to bounce all over the screen. To correct this, increase fps speed. How much faster you shoot depends upon the amount of wind and the speed at which you zoom. I've found that in a 15 mph wind, a speed of either 48 or 64 fps is best. The increased fps speed provides the effect of lazy motion while still giving a sense of realism to the shot. Remember to increase exposure half an f-number for each additional 8 fps over normal shooting speed. Slower fps speeds can be used in correspondingly less wind. If you do increase shooting speed, remember to make your zoom action faster.

Once the focusing, framing, and fps speeds have been set, you can think about exposure. Light can change quickly, so it's a good idea to leave exposure setting till last. Since close-up attachments tend to decrease the sharpness of the regular lens, it's best to shoot in strong sunlight so that you'll be able to use openings of f/8 or f/11. At smaller apertures depth of field increases for better overall sharpness. Using a gray card is about the best method when taking a reflected light meter exposure reading from a small subject—particularly if a wind keeps moving the subject away from the meter. After taking the reading, as shown in the illustration on page 107, you may want to open the lens slightly—no more than $\frac{1}{2}$ an f-number—to get more detail in darker areas.

An incident light meter may also be used for accurate exposure determination. But again open the lens slightly for detail in important darker areas.

You're ready to shoot. If your camera accepts a cable release—use one. Even the slight touch of your hand on the regular release can jar the camera.

You may find it advisable to move your close-up subjects indoors. You'll then have much more control and no worry about wind or variations in light.

Indoor lighting quality can be controlled for later intercutting by using bounce light (see illustration page 107). In fact, the reflector shown can be moved about to match the apparent direction of light with that of related scenes before and after the zoom close-up.—M.A.M.

HOW FAR HAVE WE GONE?

Editor's Note: Interesting cameras have a hypnotic fascination for most of us. Some older cameras, long discontinued, now sometimes available on used camera shelves at incredibly low prices (compared to their former tags) didn't make the grade because they were too unusual or too advanced. Herewith MODERN begins a series on such cameras resurrected from yesteryear, with full test specifications, just as the camera would have been written up in "MODERN TESTS" when it was new.

1935 TWIN-LENS CONTAFLEX IS ULTIMATE IN MINIATURES



Manufacturer's Specifications: Contaflex 35mm twin-lens reflex. Lens: (taking) 50mm f/2 Carl Zeiss Jena Sonnar in interchangeable bayonet mount, focusing to $3\frac{1}{2}$ ft.; (viewing) 80mm f/2.8. Carl Zeiss Jena Sucher-Objektiv. Shutter: Metal focal-plane with speeds from $\frac{1}{2}$ to $1/1000$ plus B. Focusing: Waist-level ground-glass focusing on $1\frac{1}{2} \times 3$ in. ground-glass screen with full Fresnel lens. Other features: Built-in photo electric exposure meter; bright frame sports-

(Continued on page 118)

BEHIND THE SCENES

(Continued from page 18)

subjected the shutter to temperatures of -70°F to +115°F. During this test the shutter was clicked as many as 20,000 times.)

3. The shutter blades run up and down the shorter width of the picture area, 24mm in 1/150 sec. Regular cloth focal-plane shutters run along the longer 36mm side, horizontally, in 1/50 to 1/60 sec. The faster travel of the Copal shutter allows a wider slit at a higher shutter speed: 3.7mm at 1/1000 second. The acceleration effect of the shutter is less because the distance to run is shorter. Tolerances for shutter speeds are kept to plus and minus 10 percent.

4. Together with fast and wider slit efficiency, the uneven exposure effect has been eliminated, according to



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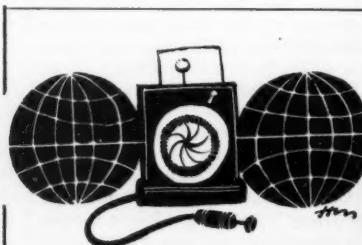
Copal, by means of independent motive power given to the shutter-releasing mechanism which is not related to the performance of shutter blades.

5. M Class flash bulbs synchronize with all shutter speeds and electronic flash to 1/125 sec.

6. The shutter dial is single-pivot, non-rotating, equidistant scaled. A removable exposure meter can be coupled to the shutter dial.

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TOO HOT TO HANDLE

(Continued from page 65)

staff has come to seriously question the truthfulness and accuracy of all-inclusive seals of approval issued by general interest magazines. Instead, MODERN stands behind every purchase by a reader from any one of its advertisers. If at any time the purchaser experiences difficulty, MODERN stands ready to intercede. In this way MODERN feels that it is serving a far better, more important role than it would by giving out gold stars which might prove meaningless.

I have a Nikon S2 rangefinder camera. Do the Komura lenses come close to matching the quality of the Nikkor lenses?—Paul Carey, Mt. Rainier, Md. The only Komura lens MODERN has tested and recommends is the 200mm f/3.5. Unfortunately, this lens is available only for single-lens reflex cameras.

SLIDE PROJECTORS

(Continued from page 77)

for a while. Which one has a sharp handle almost capable of drawing blood? How many give your shins a good bark? Does it balance evenly or tilt to one side? If you're showing super slides, are the condensers big enough to cover the larger film size?

Consider the size of the room you want to show slides in and the size of the screen you have. Then consult the table at right to find out what focal-length lens you need to fill the space. For a projector-to-screen distance of 10 to 15 ft., you'll need a projection lamp of from 200 to 500 watts. If you plan to project at about 10 ft., a 200- or 300-watt bulb is good enough. At 15 ft. or farther, you may need at least 500.

In the chart under "Notes" we've also listed smaller points with a specific appeal. The lecturer will want a pointer, and a horizontal tilt control to level off the picture on the screen. You may also want a diaphragm on the lens for special effects or if you're prone to showing slides of excessively bright scenes.

How does the projector handle the popping problem? Slides pop out of focus when a change in temperature (cold to warm) causes tension in the slide, bending it into a saucer shape. All slides pop unless they are bound in glass or plastic. It's better to pop slides before projection, unless your projector runs cool or has a special pre- or anti-popping system (see "Notes" in chart), rather than have them pop during projection. You can pre-pop slides by holding them near the projector's hot air exhaust.

Once you've selected a projector, give it a good workout in the store. Never

buy one without a money-back-guarantee trial period. Take it home, test it under actual operating conditions with slides, following the test plan on page 79. Automatic projectors are much more complicated than the old manual models in which you put one slide into a shuttle carrier, shifted the arm, removed the old

APPROXIMATE WIDTH OF IMAGE (INCHES)

Lens focal length	Distance from screen (ft.)					
	6	8	10	15	20	30
4 in.	23	31	39	59	78	119
5 in.	17	24	31	49	63	95
7 in.	12	17	22	33	45	67

slide, inserted a new one, and so on. All these automatic gadgets—timers, blowers, solenoids—mean more things that can go wrong. Breakdowns are a bigger threat.

Of the many automatic slide projectors MODERN has tested over the years, no one unit proved to be unreliable. The few projectors we received with defects were easily fixed under the guarantee.

What with lenses zooming in and out of focus, timers timing intervals, slides slipping in and out of viewing position, all untouched by human hands, you too can now sit back and enjoy your slide show. With all that free time you can map out a plan for shooting your next batch of slides and polish up that narration.—D.L.M.

HOW FAR?

(Continued from page 115)

finder; full ground-glass magnifier in hood; provision for cartridge-to-cartridge film feed. Price: \$309.00. Manufacturer: Zeiss Ikon A. G., Dresden, Germany.

The twin-lens reflex enthusiasts who have been campaigning for a camera featuring a superfast lens, complete lens interchangeability and a smaller film size have their wish and more this year of 1935. Undoubtedly the Contaflex is fairly close to the Rolls Royce of miniature precision cameras. No 35mm camera made today approaches it in ease of focusing and composing plus precision workmanship.

The Contaflex has an all-metal roller blind focal-plane shutter traveling across the short width of the film plane, provision for daylight loading cartridges without rewinding (of course, it accepts all metal and plastic cassettes as well), and excellent lenses in instant-change



(Continued on page 120)

ON NEW CAMERAS AND EQUIPMENT—LATEST MODELS SHIPPED IN ORIGINAL PACKING.

A vertical strip of ten black and white photographs showing various types of cameras. From top to bottom: 1. A compact rangefinder camera. 2. A bellows camera. 3. A compact rangefinder camera. 4. A compact rangefinder camera. 5. A movie camera with a large lens and a separate magazine. 6. A bellows camera. 7. A compact rangefinder camera. 8. A movie camera with two reels. 9. A compact rangefinder camera.

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HOW FAR?

(Continued from page 118)

bayonet lens mounts. The lineup of interchangeable Zeiss lenses available for the camera is formidable. They are: 35mm f/2.8 Biogon, 50mm f/2.8 Tessar, 50mm f/2 Sonnar, 50mm f/1.5 Sonnar, 85mm f/4 Triotar, 85mm f/2 Sonnar and 135mm f/4 Sonnar. Only the taking lens need be changed. The 80mm f/2.8 viewing lens is permanently mounted and shows an enlarged ground-glass image



which has etched lines outlining the fields of view for 85 and 135mm lenses. The whole ground glass shows the 50mm area. The ground glass is automatically parallax corrected by a moving mask underneath the ground glass. There is no finder for the area of the 35mm lens.

The coupling of the 80mm viewing lens with the various interchangeable focal-length taking lenses so that accurate focus can be maintained is especially ingenious. Each lens contains its own helical focusing mount. When the taking lens is inserted into the camera it becomes interlocked with the viewing lens. By rotating a small but efficient lever on the viewing lens both lenses rotate an equal amount. But the helical threads of each lens have a different pitch so that the amount of forward or backward movement of each lens varies according to the focal length. As a result, a constant check on the focus can be made, before, during and after exposure, no matter what lens is used. The view on the ground glass is exceptionally bright and sharp to the corners. A quarter turn of the focusing lever moves all lenses from 3 1/2 ft. to infinity.

Since the format of 35mm is horizontal, the taking of vertical pictures can be rather awkward even if you use the bright frame optical sportsfinder built into the viewing hood which has frames for the 50 and 85mm lenses.

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(Continued on page 122)

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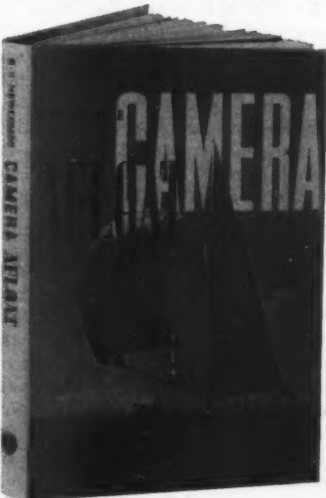
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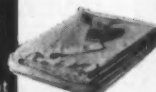
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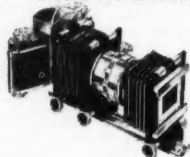
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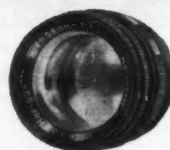
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